



BCM RIs 6.0

Networking Essentials

Task Based Guide

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Networking Essentials

Overview

It is certain that at some point during the configuration and installation of the BCM that some basic networking skills will be required. Though it is very likely that some of those skills are already known and practised, this guide is designed to provide assistance in configuring and using your PC to allow communication and configuration between the BCM and other systems.

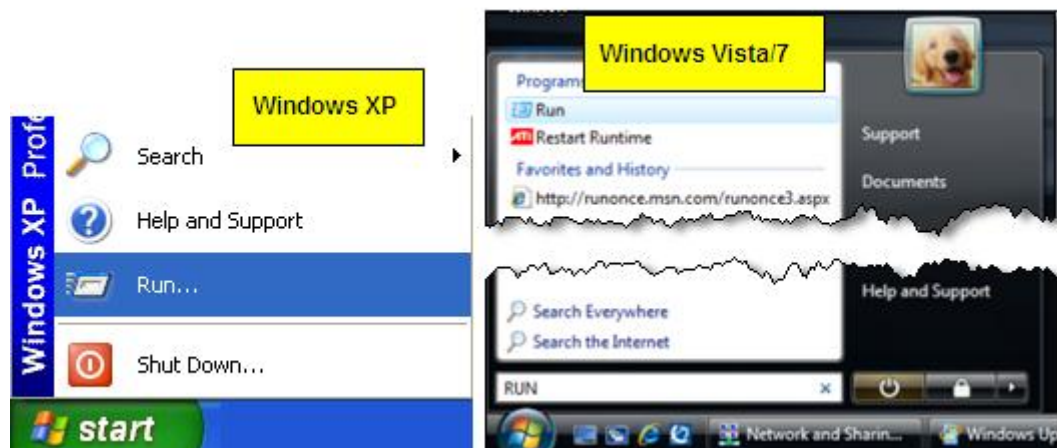
Note: This document describes processes for the Windows XP, Vista, and 7 Operating Systems.

Ping (Packet Internet Groper)

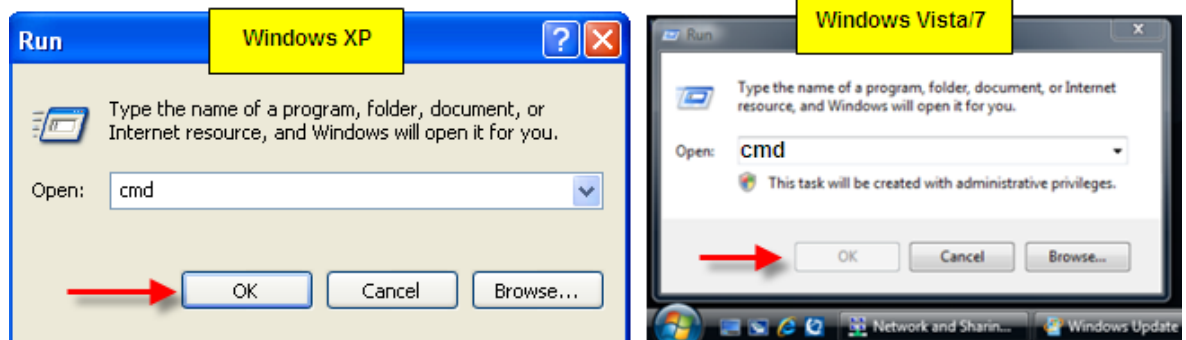
When a physical connection has been made between two computer systems via the Network Interface Cards, you may wish to test the connection by “pinging” the IP address of the other system. Ping is a utility available only with the TCP/IP protocol, and is used for diagnostic purposes only.

Windows XP / Vista & 7

1. For Windows XP go to the **Start** button on your Windows desktop, and select **Run**. For Vista/Windows 7 click on Windows icon and in search box type **RUN** and hit enter.



2. Type **command** (or **cmd** if command is not successful) and press **OK**. This will bring up the MS-DOS prompt.



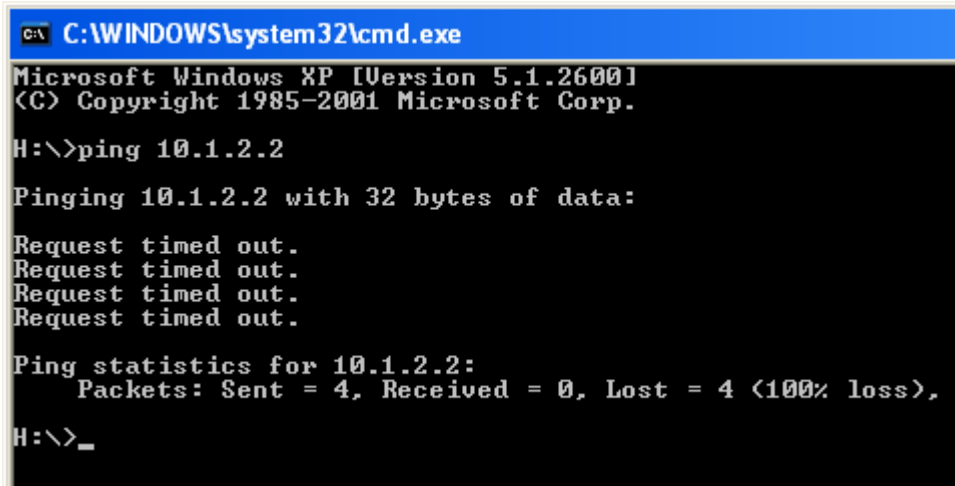
3. Type **ping** (leave a space) followed by the IP Address of the Network Interface Card on the other computer (e.g. for BCM, the default IP Addresses are OAM Port = 10.10.11.1, LAN Ports = 192.168.1.2 for BCM50 or 192.168.2.2 for BCM450). Press **Enter**.

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.
H:\>ping 10.1.1.2
```

4. There are differing responses that may now be displayed.
 - a. If a **Reply** is received from the other computer (as displayed below) the IP connection is working.

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.
H:\>ping 10.1.1.2
Pinging 10.1.1.2 with 32 bytes of data:
Reply from 10.1.1.2: bytes=32 time<1ms TTL=64
Reply from 10.1.1.2: bytes=32 time<1ms TTL=64
Reply from 10.1.1.2: bytes=32 time<1ms TTL=64
Reply from 10.1.1.2: bytes=32 time<1ms TTL=64
Ping statistics for 10.1.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
H:\>_
```

- b. If any other response is displayed, check the IP settings of your laptop/PC and the physical connection between the laptop/PC and BCM.



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

H:\>ping 10.1.2.2

Pinging 10.1.2.2 with 32 bytes of data:

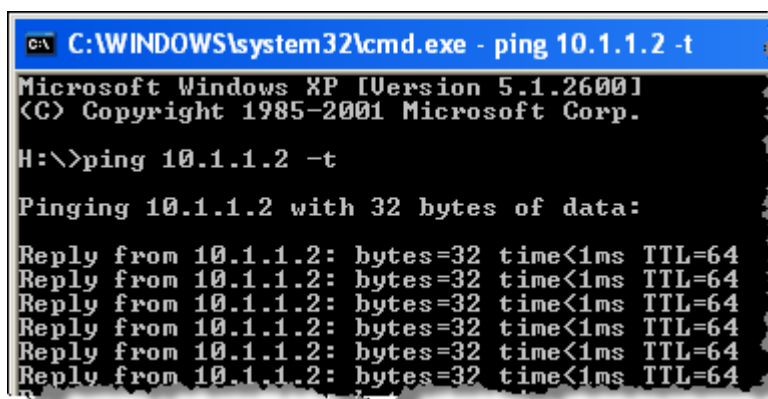
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.1.2.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

H:\>_
```

Note: Pinging the IP Address 127.0.0.1 is a self-diagnostic test to confirm that the Network Interface Card on your computer is functioning correctly. This applies to whichever operating system is being used.

5. Adding further switches to the Ping command will allow other benefits. For example, start by typing the **ping** command as shown earlier, then leaving a space behind the IP Address and then type **-t**, finish by pressing return. The ping will now run continuously until you stop it by pressing the **CTRL & C** keys simultaneously.



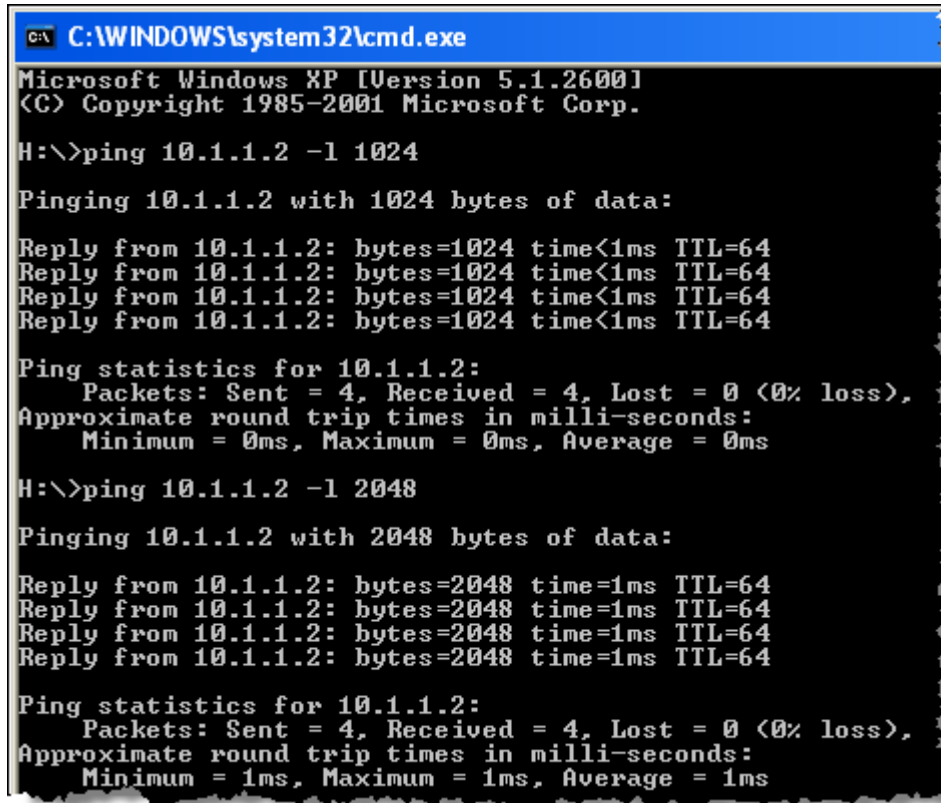
```
C:\WINDOWS\system32\cmd.exe - ping 10.1.1.2 -t
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

H:\>ping 10.1.1.2 -t

Pinging 10.1.1.2 with 32 bytes of data:

Reply from 10.1.1.2: bytes=32 time<1ms TTL=64
Reply from 10.1.1.2: bytes=32 time<1ms TTL=64
Reply from 10.1.1.2: bytes=32 time<1ms TTL=64
Reply from 10.1.1.2: bytes=32 time<1ms TTL=64
Reply from 10.1.1.2: bytes=32 time<1ms TTL=64
Reply from 10.1.1.2: bytes=32 time<1ms TTL=64
```

6. Another useful switch that can be used is **-l**. When this is placed at the end of the ping command, it allows you to specify how much data is to be sent in the ping packet. For example, **ping 10.1.1.2 -l 2048** will send a ping command with 2048 bytes of data opposed to the standard 32 bytes.

A screenshot of a Windows XP command prompt window. The title bar reads 'C:\WINDOWS\system32\cmd.exe'. The window shows the output of two ping commands. The first command is 'ping 10.1.1.2 -l 1024', which shows four successful replies with 1024 bytes of data, a time of less than 1ms, and a TTL of 64. The second command is 'ping 10.1.1.2 -l 2048', which also shows four successful replies with 2048 bytes of data, a time of 1ms, and a TTL of 64. Both commands show 0% packet loss and 0ms round trip times.

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

H:\>ping 10.1.1.2 -l 1024

Pinging 10.1.1.2 with 1024 bytes of data:

Reply from 10.1.1.2: bytes=1024 time<1ms TTL=64
Reply from 10.1.1.2: bytes=1024 time<1ms TTL=64
Reply from 10.1.1.2: bytes=1024 time<1ms TTL=64
Reply from 10.1.1.2: bytes=1024 time<1ms TTL=64

Ping statistics for 10.1.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

H:\>ping 10.1.1.2 -l 2048

Pinging 10.1.1.2 with 2048 bytes of data:

Reply from 10.1.1.2: bytes=2048 time=1ms TTL=64
Reply from 10.1.1.2: bytes=2048 time=1ms TTL=64
Reply from 10.1.1.2: bytes=2048 time=1ms TTL=64
Reply from 10.1.1.2: bytes=2048 time=1ms TTL=64

Ping statistics for 10.1.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

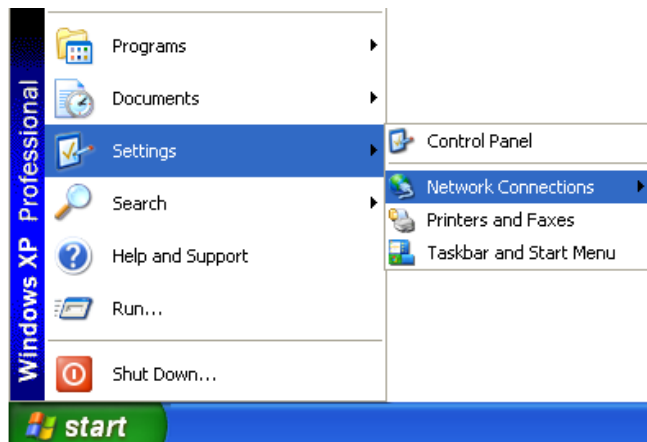
Configuring Network Settings

In order to connect your PC/laptop to a BCM for configuration or maintenance purposes, it may be necessary to change your network settings to be compatible with the BCM and/or network. For example, if connecting to a BCM port that has DHCP enabled, you can configure your laptop network adapter to obtain an IP address automatically.

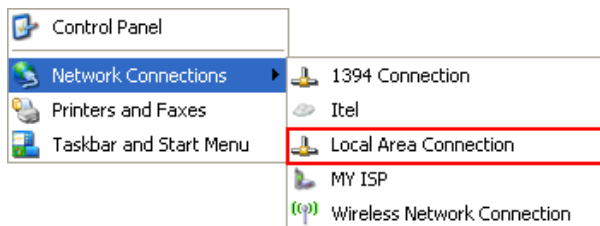
To be able to make the changes detailed below, you must log-on to the PC with Administrative rights. Contact the site network administrator for information on how to do this.

Windows XP

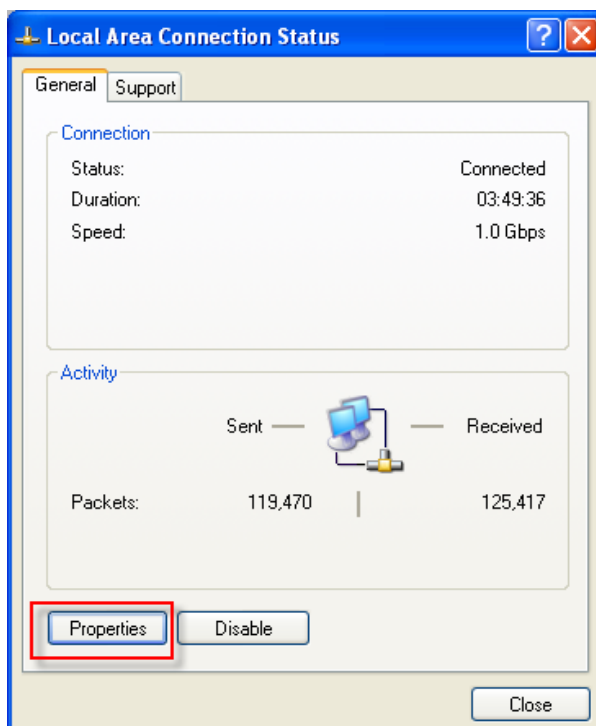
1. To access the network settings on the PC you wish to configure, click on **Start**, **Settings**, and select **Network Connections**.



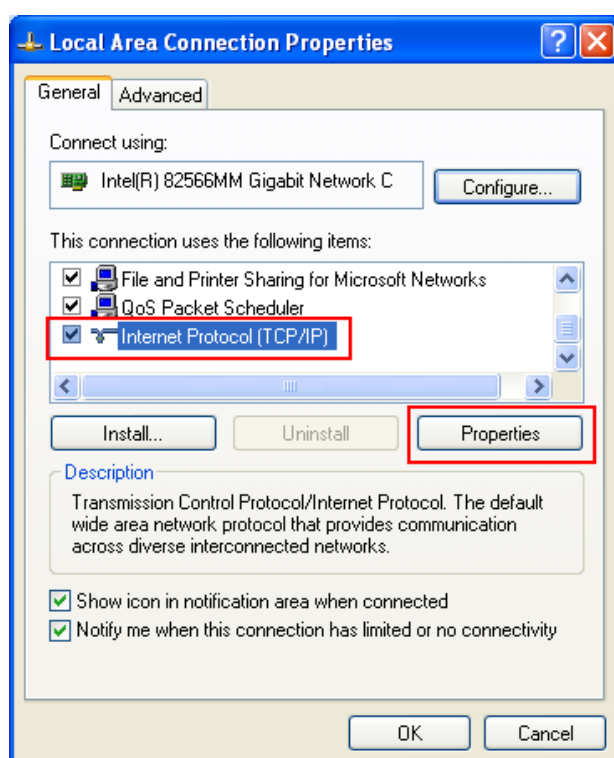
2. From the **Network Connections**, double click on the **Local Area Connections (LAN)** icon.



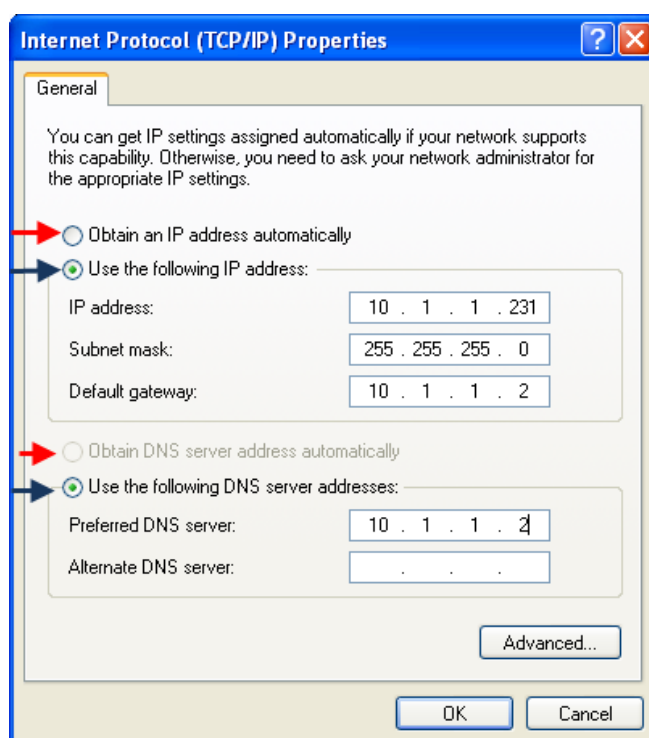
3. Left-click the **Local Area Connection** icon and select **Properties**.



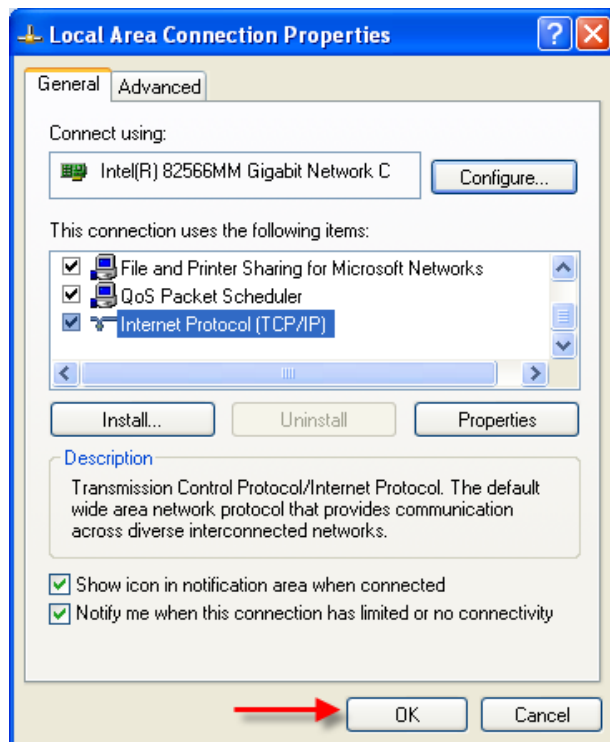
4. Select **Internet Protocol (TCP/IP)** and click on **Properties**.



5. If a DHCP server is being used to allocate IP addresses, simply ensure that the option for **Obtain an IP address automatically** is set. The similar setting should be applied for the DNS server. However, clicking on the option to **Use the following IP address** or **DNS server addresses** will give you the option to specify the required information.

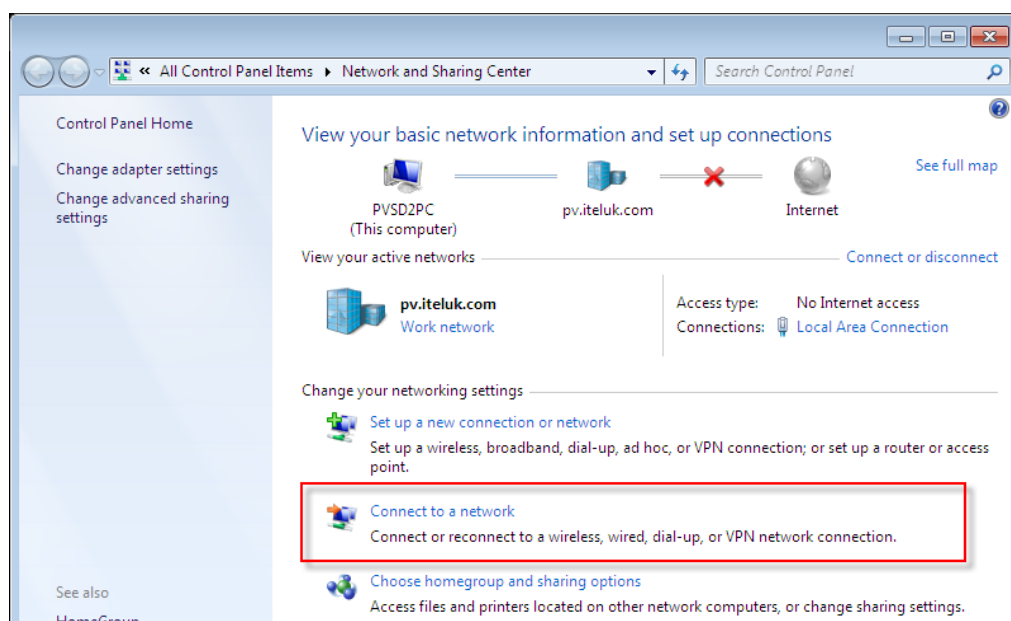


- Click the **OK** button once configured. Click **OK** on the **Local Area Connections** dialog box. You will not be prompted to reboot the PC after configuring these settings.

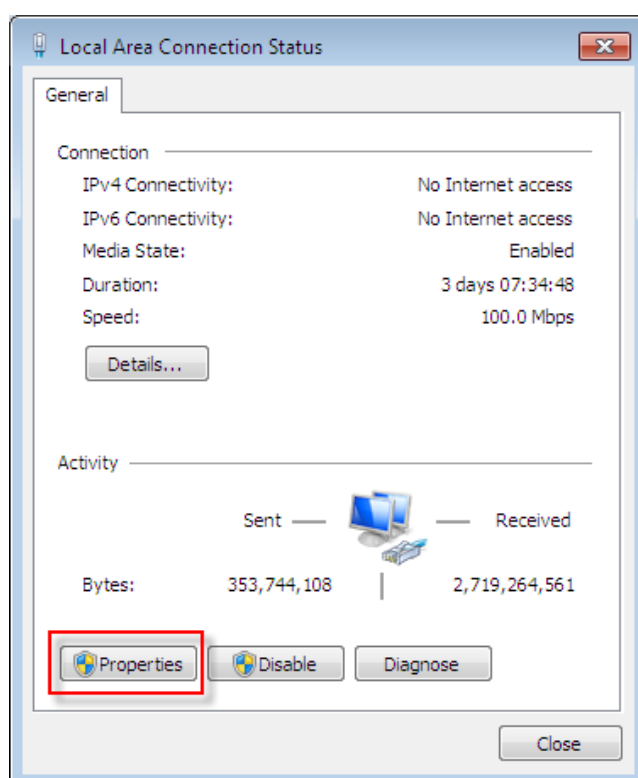


Windows Vista & 7

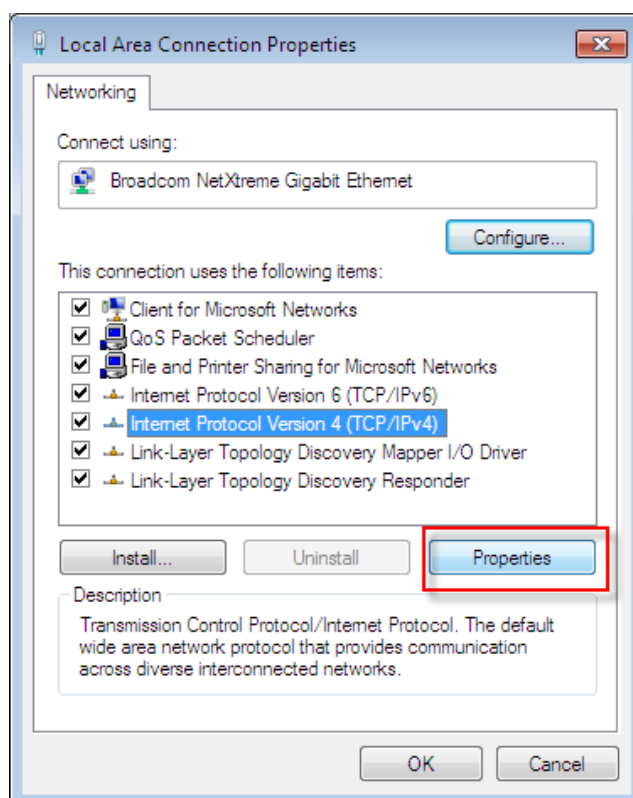
- To access the network settings on the PC you wish to configure, click on **Start**, **Settings**, and select **Control Panel**.
- From the Control Panel, double-click on the **Network and sharing icon**. From this page select the **Connect to a Network** link.



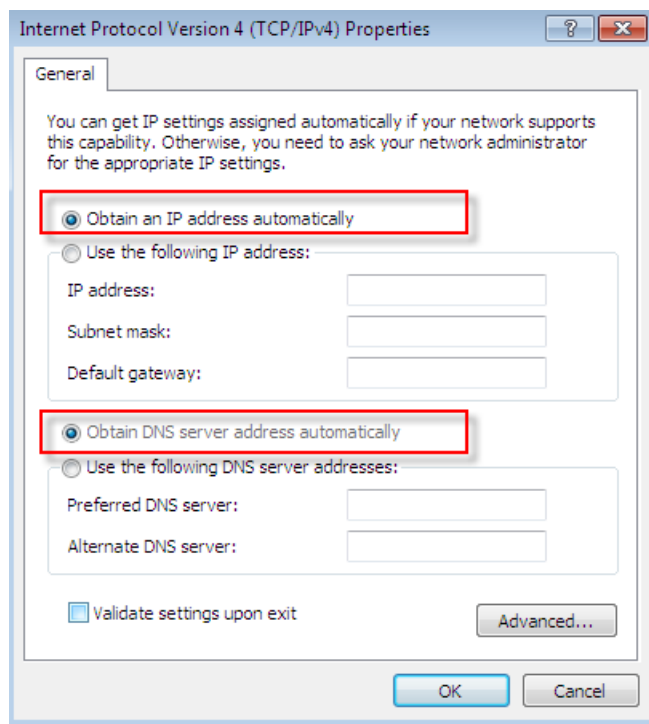
3. In the **Local Area Connection Status** screen select **Properties**.



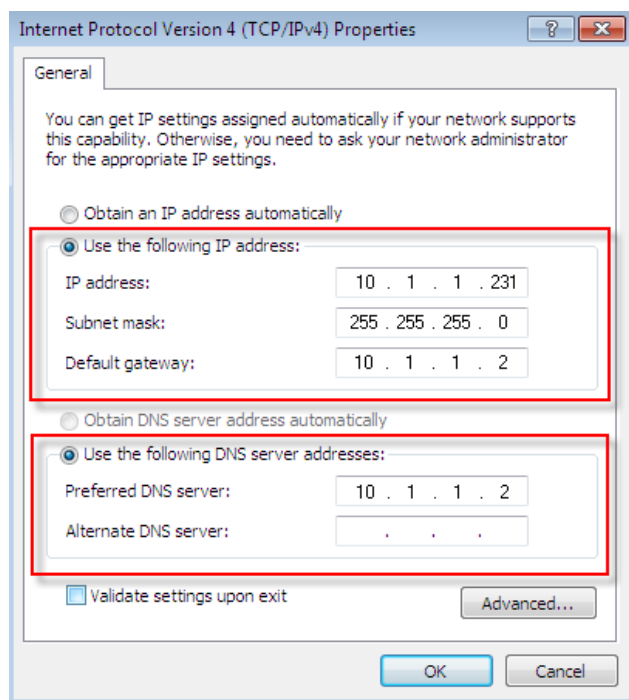
4. In the **Local Area Connections Properties** screen, from the list in **This connection uses the following items:** Select **Internet Protocol (TCP/IP)** and click on **Properties** again.



5. If a DHCP server is being used to allocate IP addresses, simply ensure that the option for **Obtain an IP address automatically** is set. The similar setting should be applied for the DNS server.



6. However, clicking on the option to **Use the following IP address** or **DNS server addresses** will give you the option to specify the required information.



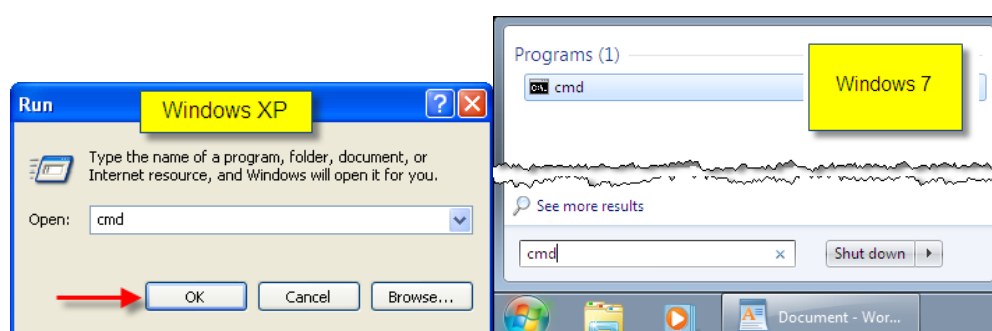
7. Click the **OK** button once configured. You will not be prompted to reboot the PC after configuring these settings.

IPConfig

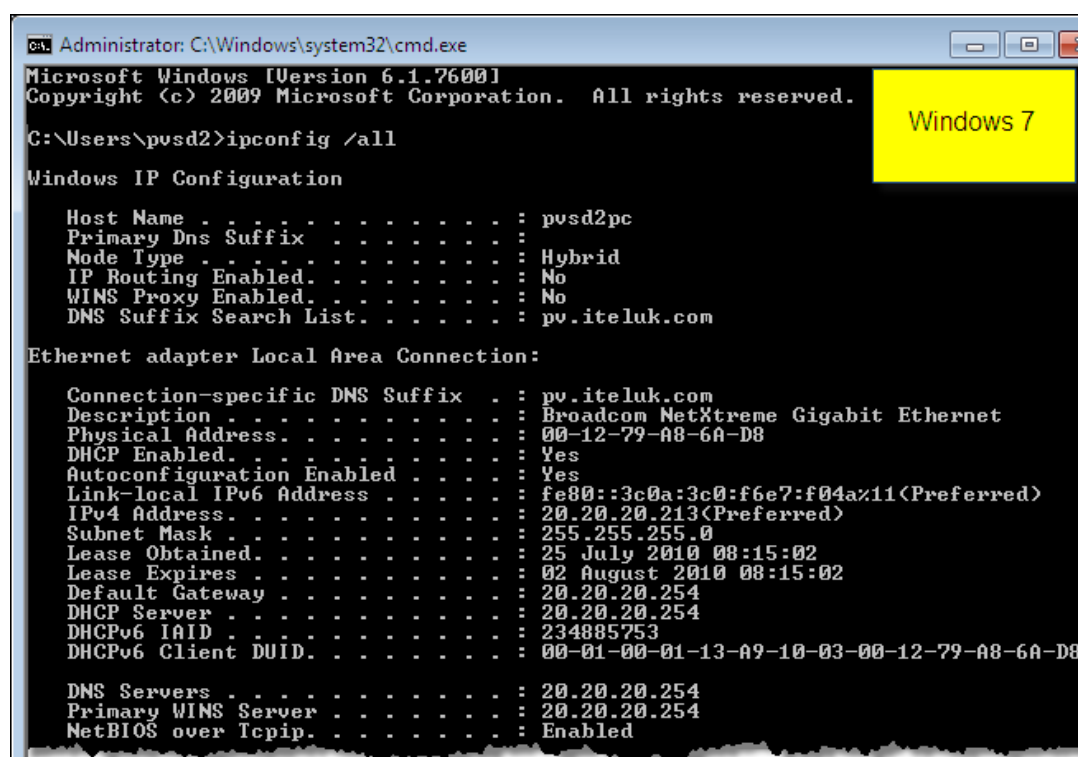
To view the IP configuration settings of a computer, you can run the ipconfig command. The IP Configuration settings will include information like your computer's IP Address, the Physical (MAC) address and whether or not a DHCP Server is available on your network.

Windows XP / Windows Vista & 7

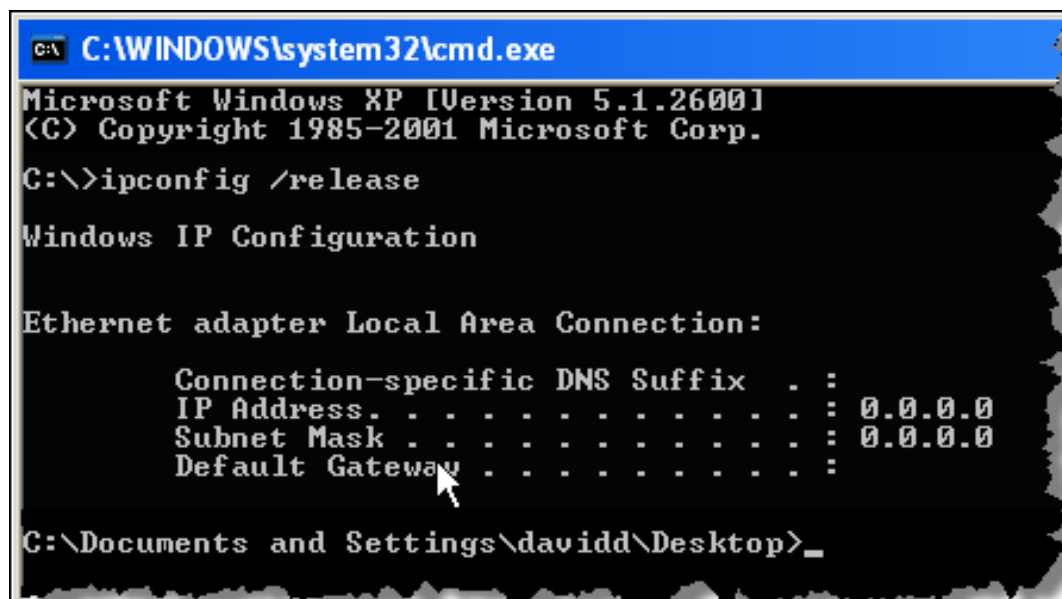
1. From the Start command on the computer desktop, select **Run** and in the Run dialogue box, type **cmd** then press the **Enter** key. This will launch the MS-DOS Screen.



2. At the command prompt type **ipconfig /all**. This will display the IP configuration settings.



3. If a DHCP Server is being used, then it is possible to return the IP Address that has been assigned to you back to the server. To do this, type **ipconfig /release** at the command prompt.



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\>ipconfig /release

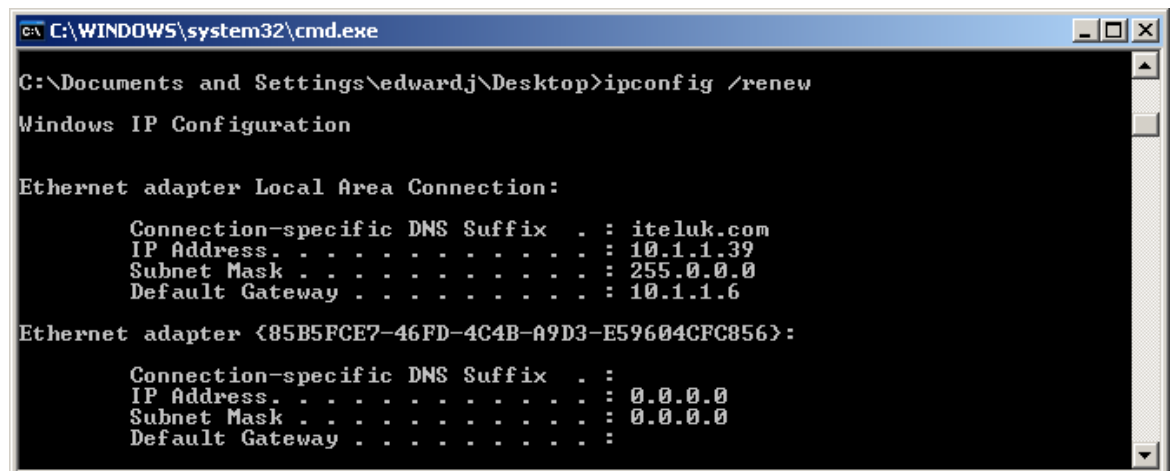
Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : 0.0.0.0
    Subnet Mask . . . . . : 0.0.0.0
    Default Gateway . . . . . : 

C:\Documents and Settings\davidd\Desktop>
```

4. After releasing the IP Address, it will be necessary to get another. In order to do this, type the command **ipconfig /renew** at the command prompt, again followed by the enter key. Your new IP Address will now be assigned to you. Don't be too concerned if this is the same as the address previously assigned, remember that the IP Address will be given out in order of whichever address is available first.



```
C:\WINDOWS\system32\cmd.exe

C:\Documents and Settings\edwardj\Desktop>ipconfig /renew

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : iteluk.com
    IP Address. . . . . : 10.1.1.39
    Subnet Mask . . . . . : 255.0.0.0
    Default Gateway . . . . . : 10.1.1.6

Ethernet adapter {85B5FCE7-46FD-4C4B-A9D3-E59604CFC856}:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : 0.0.0.0
    Subnet Mask . . . . . : 0.0.0.0
    Default Gateway . . . . . :
```

5. It may at times be necessary to see which computers have what IP Address and MAC address. For those computers that use the DHCP service, this can be achieved using ARP (Address Resolution Protocol). At the command prompt, simply type **arp -a** followed by the enter key. A table will be displayed showing the IP Addresses and MAC addresses of all systems using DHCP.

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

H:\>arp -a

Interface: 10.1.1.39 --- 0x2
Internet Address      Physical Address      Type
10.1.1.2              00-a0-cc-55-f5-16     dynamic
10.1.1.3              00-11-85-5c-f2-0c     dynamic
10.1.1.4              00-50-7f-31-d0-31     dynamic
10.1.1.6              00-14-6c-cc-4e-ad     dynamic
10.1.1.17             00-19-bb-d2-a3-0a     dynamic
10.1.1.23             00-0e-7f-b3-f6-f5     dynamic
10.1.1.31             00-10-18-10-76-62     dynamic

Interface: 200.30.30.108 --- 0x10005
Internet Address      Physical Address      Type
200.30.30.7           00-a0-c5-cb-80-37     dynamic
200.30.30.88          00-15-00-3a-d8-f5     dynamic

H:\>_
```


Creating Shortcuts

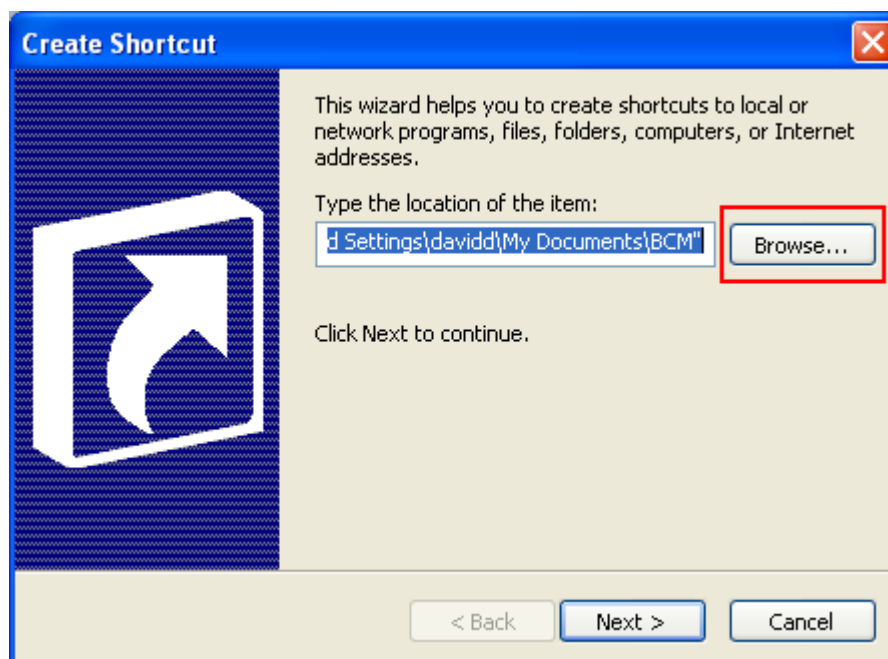
It can be very useful to create shortcuts for specific programs and have these placed on the computer desktop to allow quick and easy access. For the example described in the following procedure, the creation of a shortcut to a folder named BCM will be shown.

Windows XP

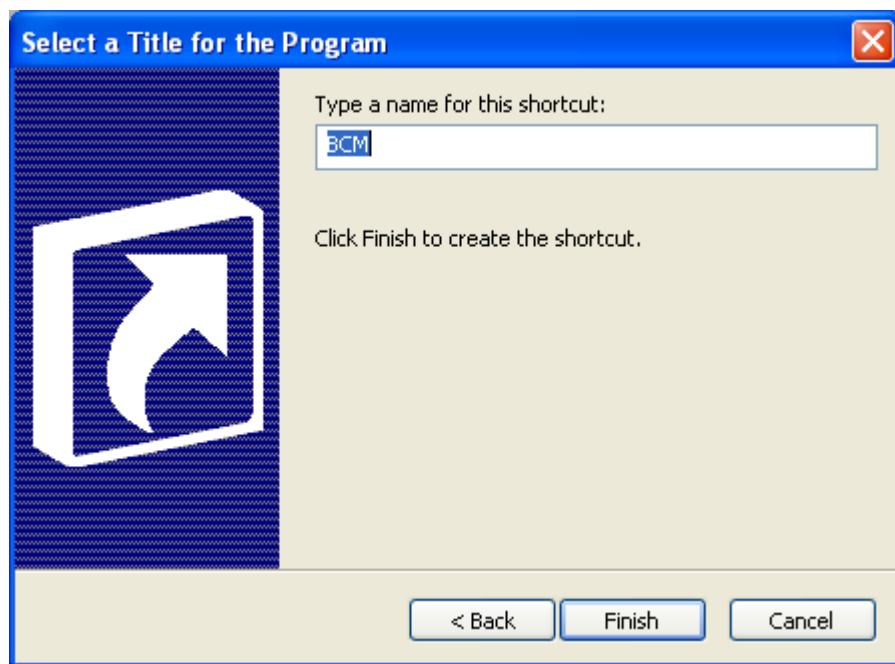
1. To create a shortcut on a user's desktop, right click on the desktop and select **New** from the menu, then select **Shortcut**.



2. The Create Shortcut screen will appear allowing the user to browse to the folder or application that requires a short cut creating. Click on Browse to locate the required folder or application.



3. Name the shortcut appropriately, and click **Finish**.

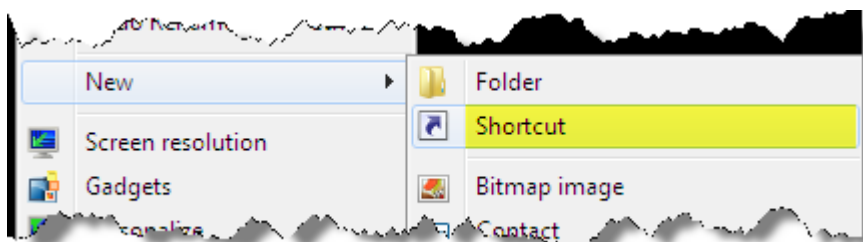


4. This will place the shortcut on your computer desktop. Double clicking on the icon will open that program or file as required.

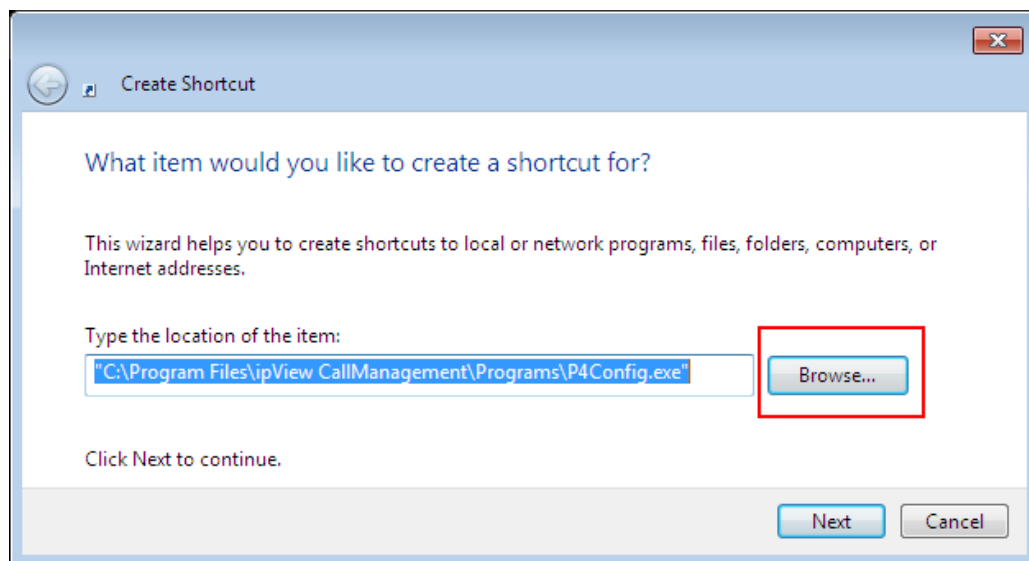


Windows Vista & 7

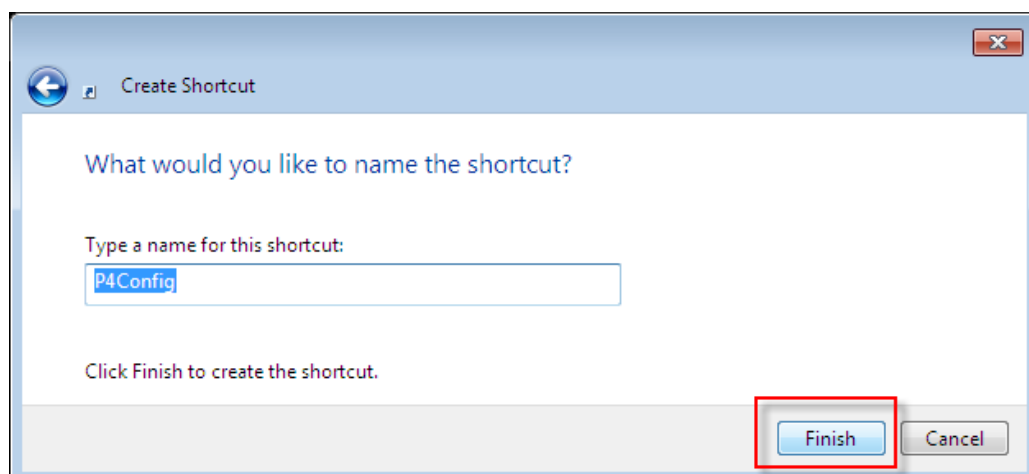
1. To create a shortcut on a user's desktop, right click on the desktop and select **New** from the menu, then select **Shortcut**.



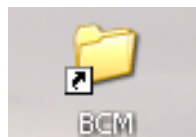
2. The Create Shortcut screen will appear allowing the user to browse to the folder or application that requires a short cut creating. Click on Browse to locate the required folder or application.



3. Name the shortcut appropriately, and click **Finish**.



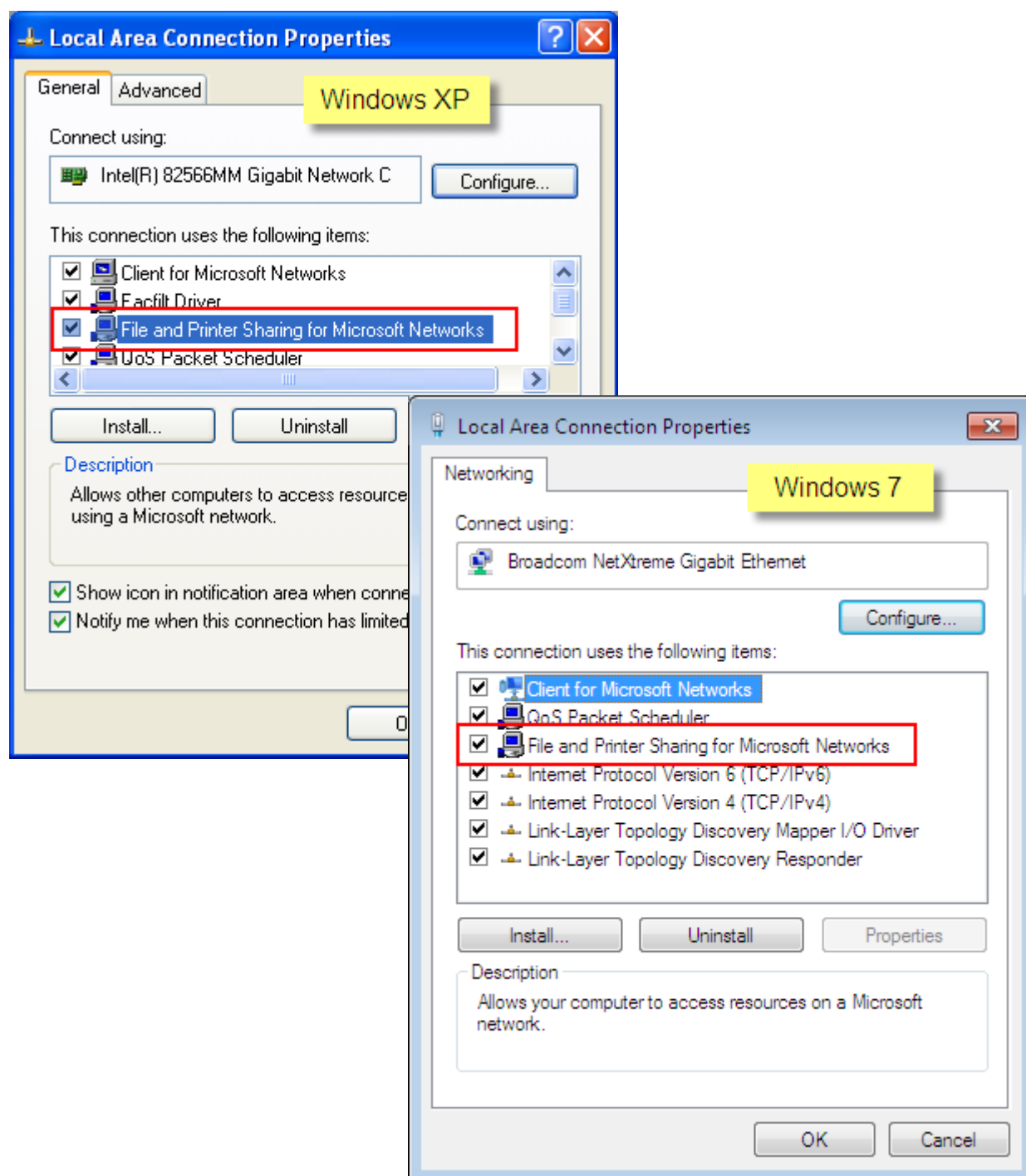
4. This will place the shortcut on your computer desktop. Double clicking on the icon will open that program or file as required.



Sharing Folders

It may be necessary to create a shared folder that is accessible to a device, so that backup files can be sent across the network and stored within that folder.

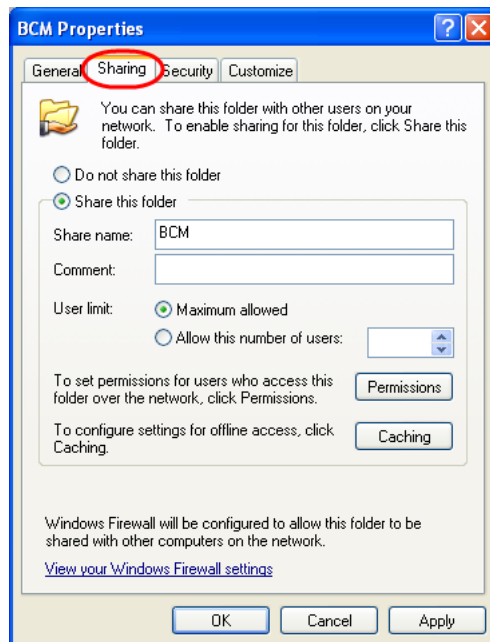
Folders can only be shared if the option has been chosen in the setting of the network connection properties.



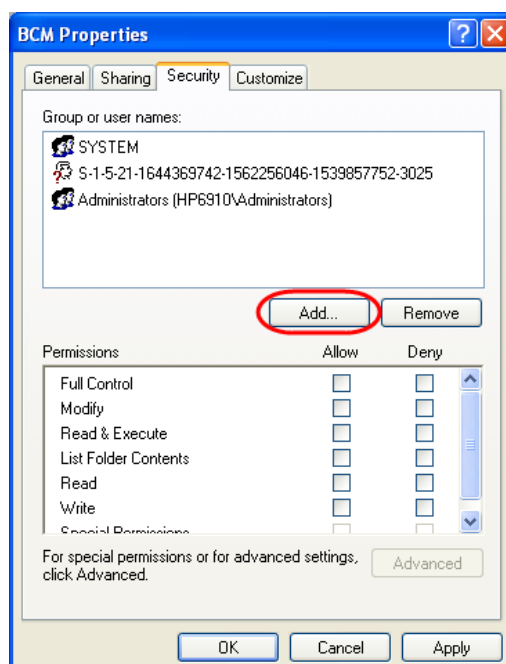
Windows XP

Open Windows Explorer and select the folder to be shared. Then do the following:

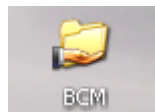
1. Right click the folder and select **Sharing** from the menu. The folder properties dialogue box will appear. Fill in the **Share Name** and **Comment** text boxes. Then select the **Security** tag.



2. From here you can choose **Add** to select and specify user groups. As a default **Everyone** will be added. You can also change the levels of **Permissions** for that group.



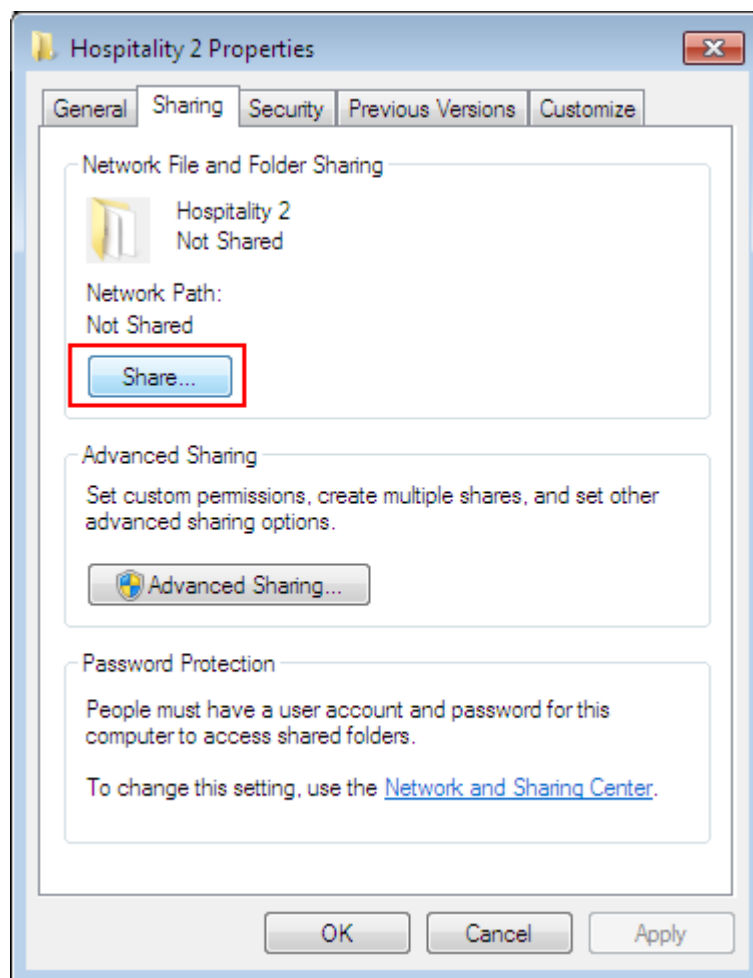
3. Click **OK** once you set the properties as required. A symbol of a hand will appear under the folder indicating that it is now shared.



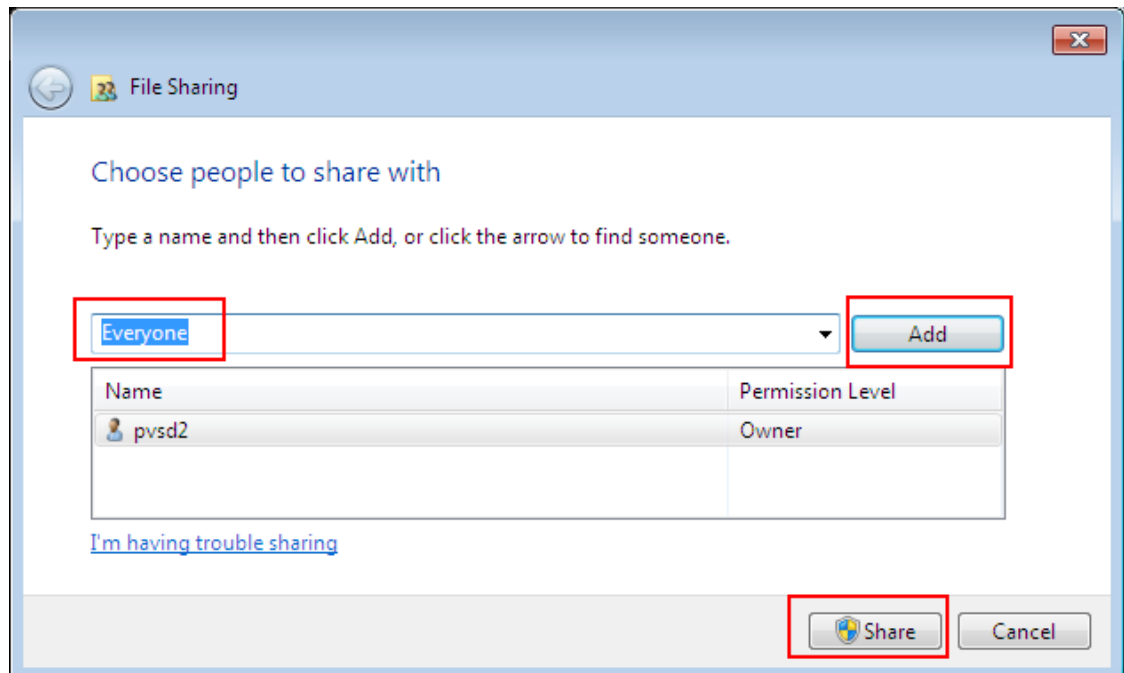
Windows Vista & 7

Open Windows Explorer and select the folder to be shared. Then do the following:

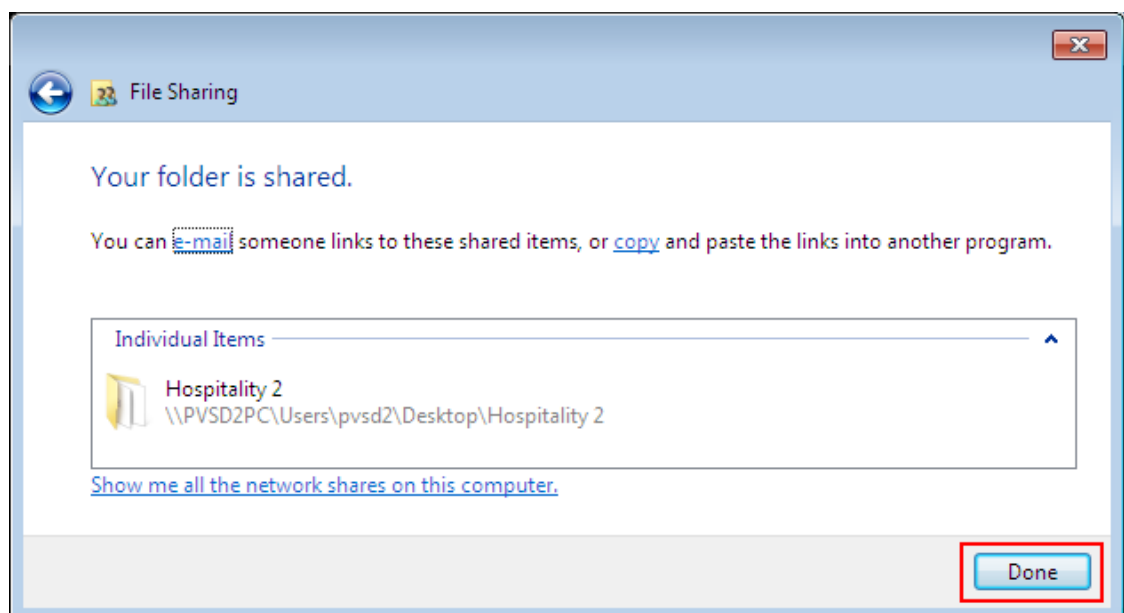
1. Right click the folder and select **Sharing and Security** from the menu. The folder properties dialogue box will appear. By default “Not shared” is selected. Click the **Share** button to share the folder.



2. Fill in the **Name** of those who will share this folder and **Add** them to the list. Once all those requiring sharing this folder then click **Share**.



3. Your folder is now shared. Click **Done** to finish.



4. Once the properties have been set as required. A symbol of a hand will appear under the folder indicating that it is now shared.

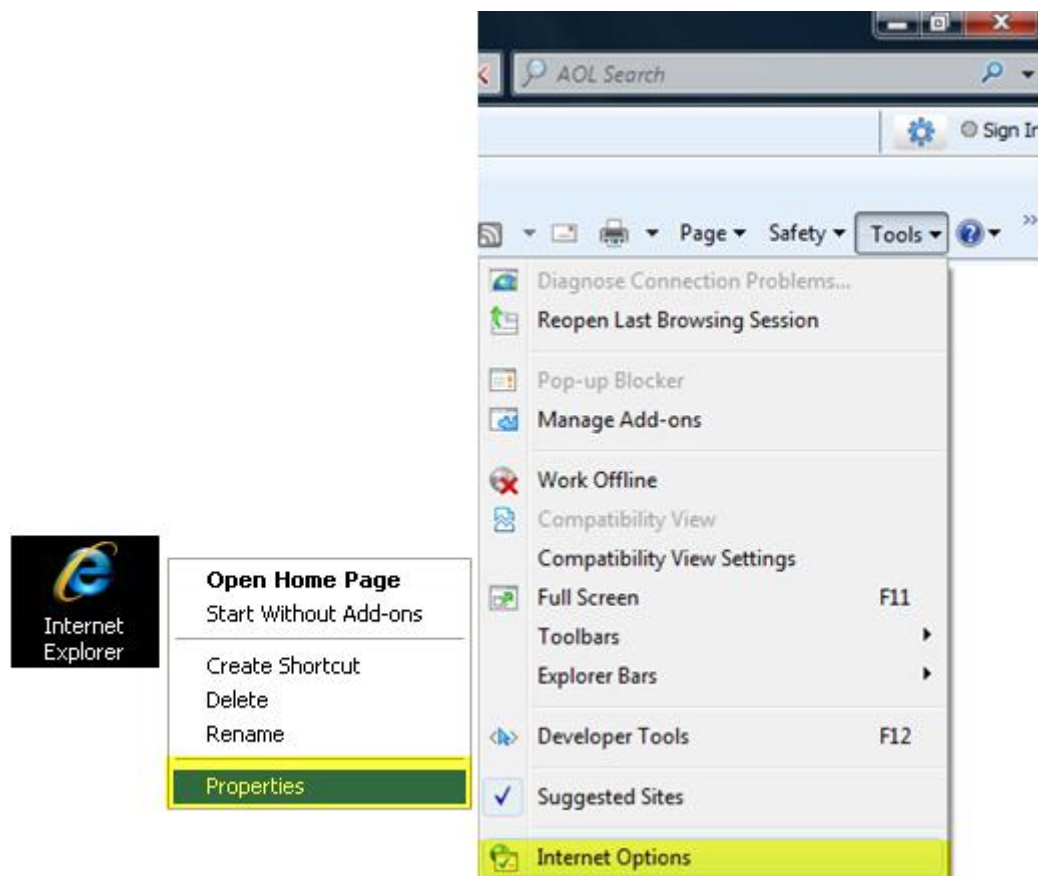


Internet Browser Settings

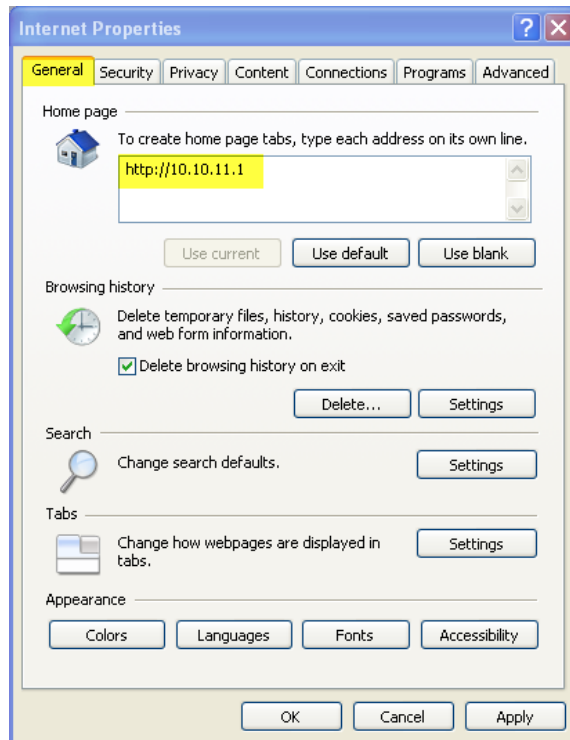
It may be necessary to alter the Internet browser settings for the Internet connection.

Windows XP / Windows Vista & 7

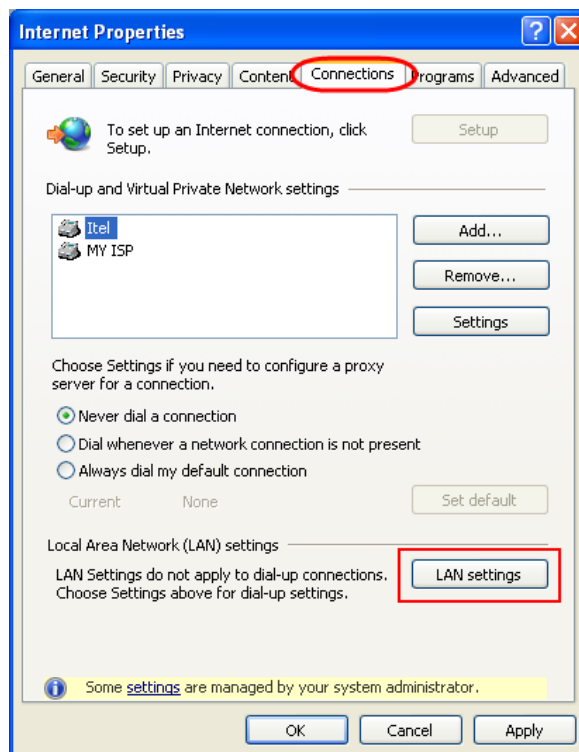
1. To configure Internet Explorer, right click on the **Internet Explorer** icon of your desktop and select **Properties**, or open an Internet Explorer window then select **Tools** and select **Internet Options**. This will then launch the **Internet Properties** screen.



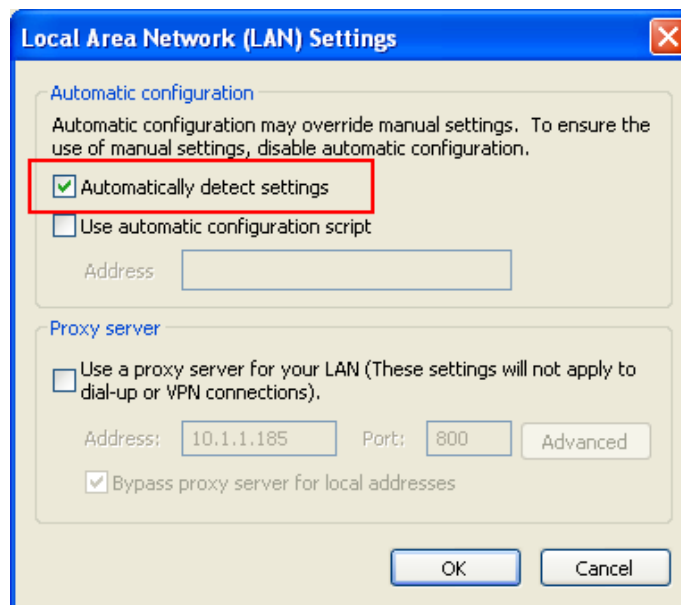
2. The **General** tab (first displayed) shows the Home Page address that will be opened every time Internet Explorer is launched. You may wish to ensure that the BCM web page is first displayed when you open the web browser, therefore type in the BCM's IP Address in the **Address** field. (e.g. **http://10.10.11.1**)



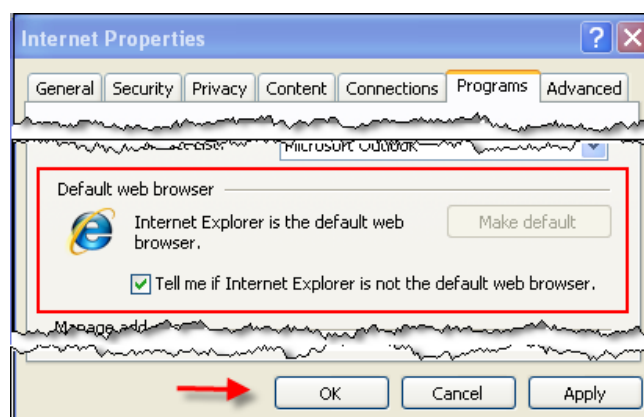
3. Now click on the **Connections** tab.



4. Then click on the **LAN Settings** button. The tick box next to **Automatically detect settings** should be ticked, unless a Proxy server is configured for the network (in which case consult the network administrator).

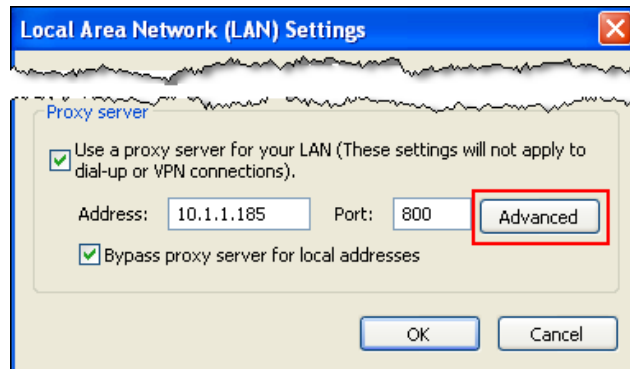


5. To set Internet Explorer as the default Web browser on your PC, select the **Programs** tab from the Internet Explorer properties dialogue box. A tick box is available on this screen next to the sentence **Tell me if Internet Explorer is not the default web browser**.

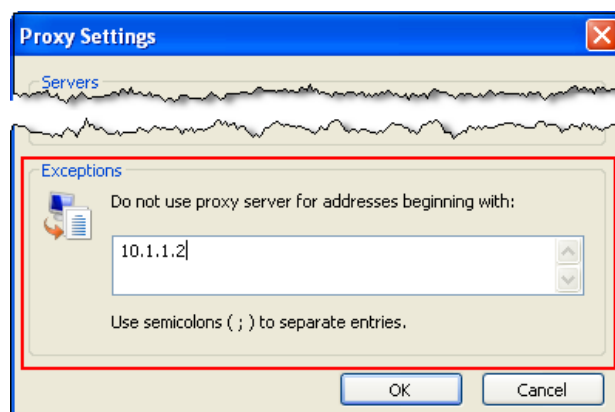


To add an IP Address for local access that will bypass the use of the Proxy Server, use the following procedure. This is useful for accessing devices such as the BCM or RCC web host PC that reside on the local network, where a Proxy Server is configured to control external http traffic.

1. Access the proxy server connections via, LAN settings, Proxy Server, Advanced button.



2. In the Exceptions screen enter the IP address of the BCM (or RCC web host PC or other local http server) to bypass the proxy server.



Configuring Java settings

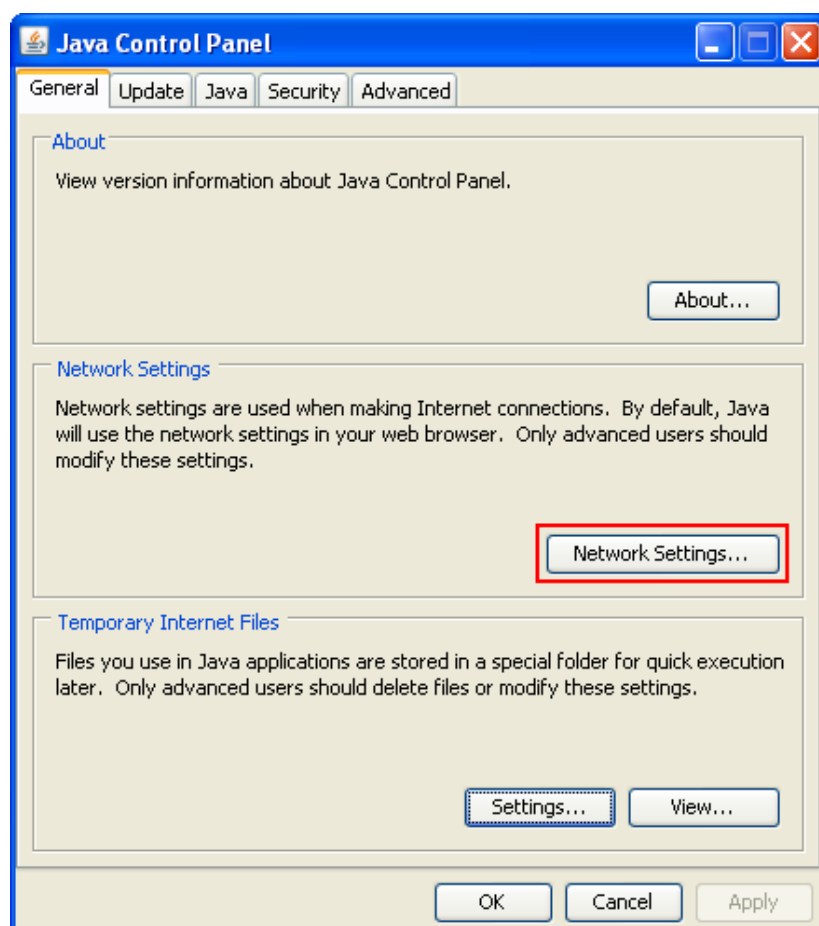
To allow a connection to CallPilot Manager, Java console may need to be set for whichever Internet browser you are using.

Java

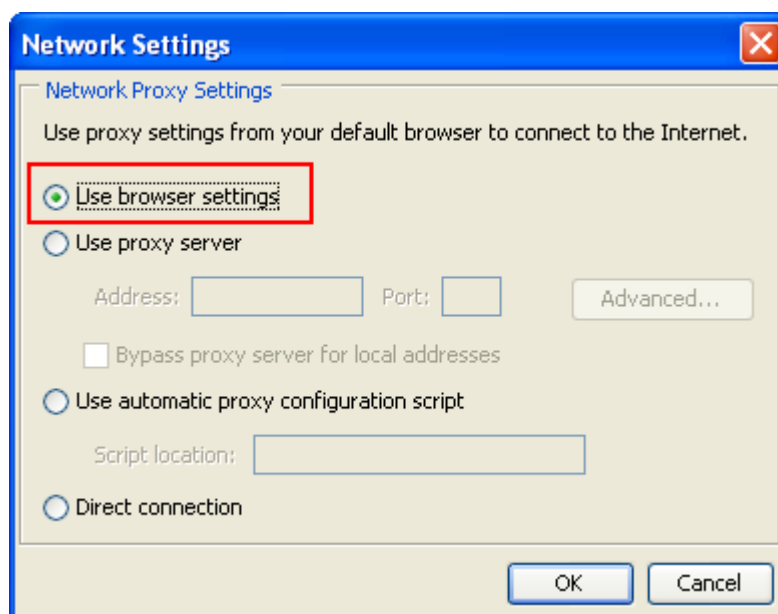
1. To configure Java settings for the PC, click on Start, Settings, Control Panel. Then double left Click on the **Java** icon.



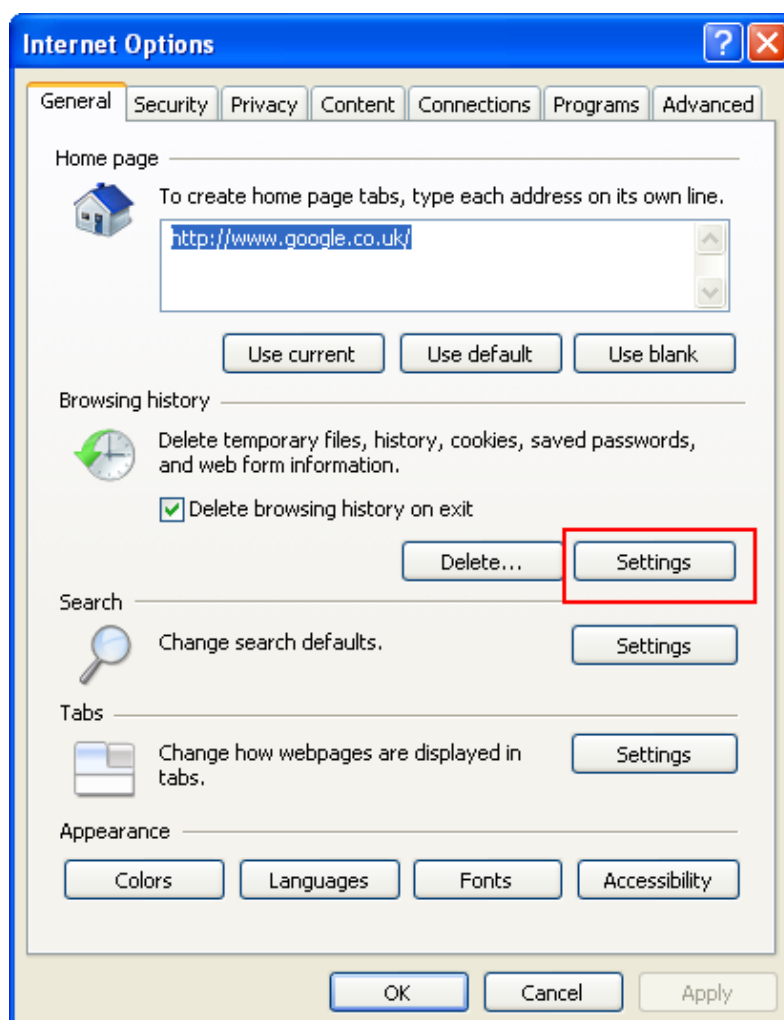
2. On your Java Control Panel select **Network Settings**. The Network Proxy Settings screen will appear.



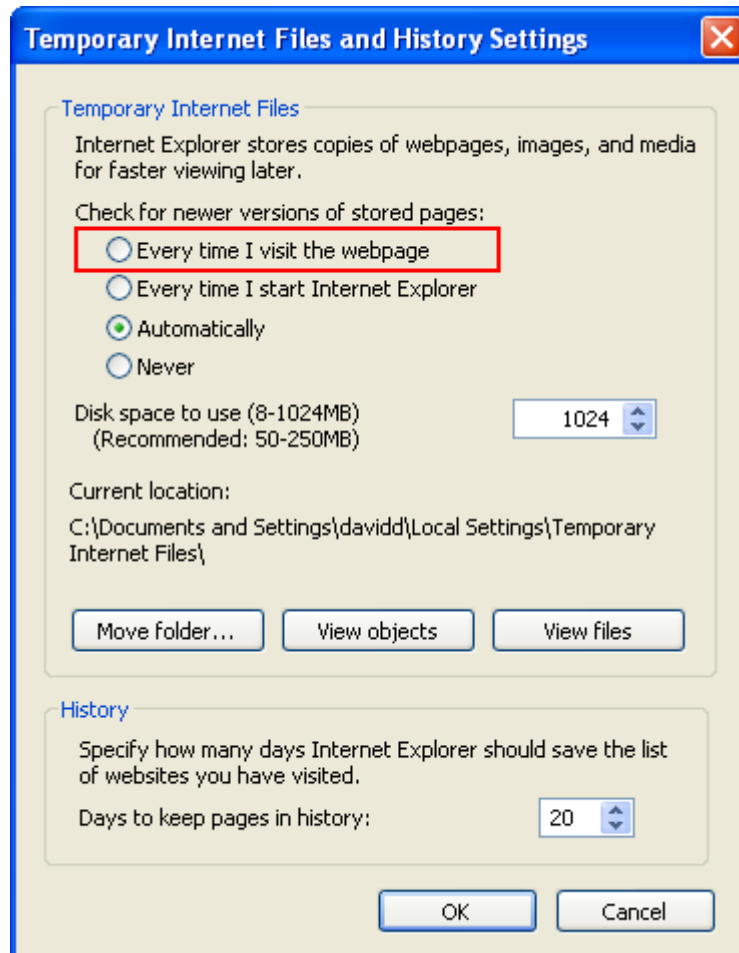
3. Click **Use Browser Settings**.



4. Click on the **General** tab of the properties screen. In the centre section for Temporary Internet Files, click on the **Settings** button.



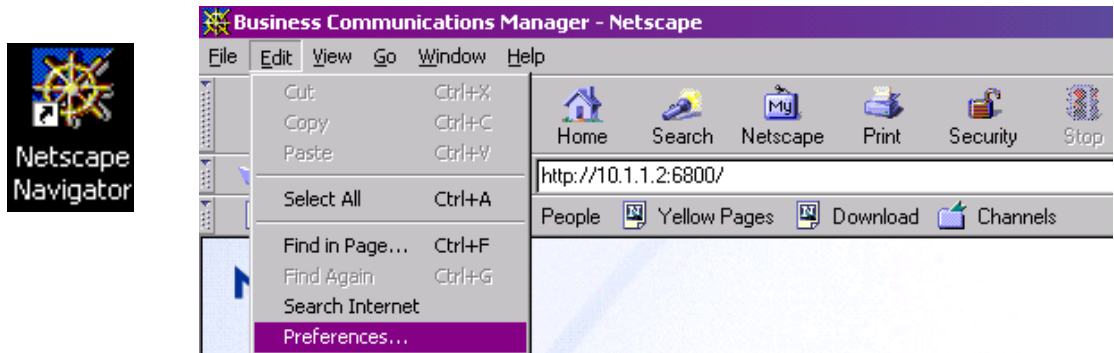
5. The **Settings** dialogue box will appear. Click on the radio button next to the line **Every visit to the page**. This will ensure that there are up to date versions being provided on a regular basis, and that information is not being retrieved from the cached memory. Click on the **OK** button to apply this setting.



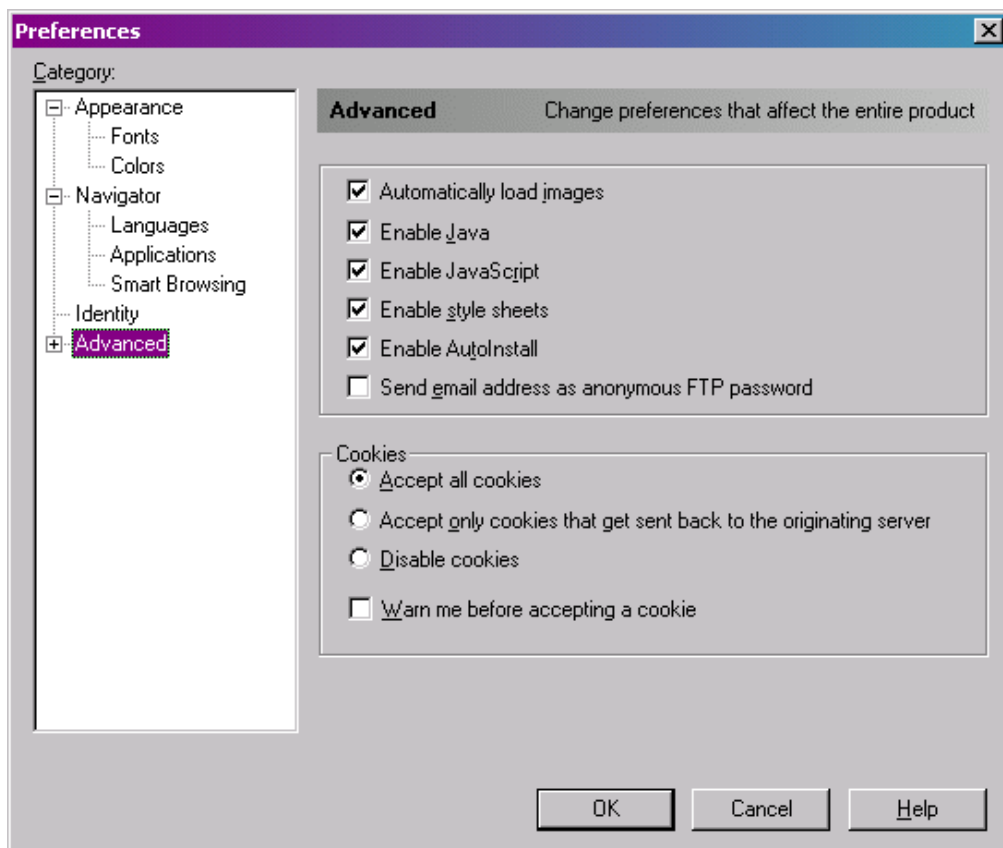
6. Finally click on the **OK** button on the bottom of the Internet Properties screen, and reboot your computer if necessary.

Netscape

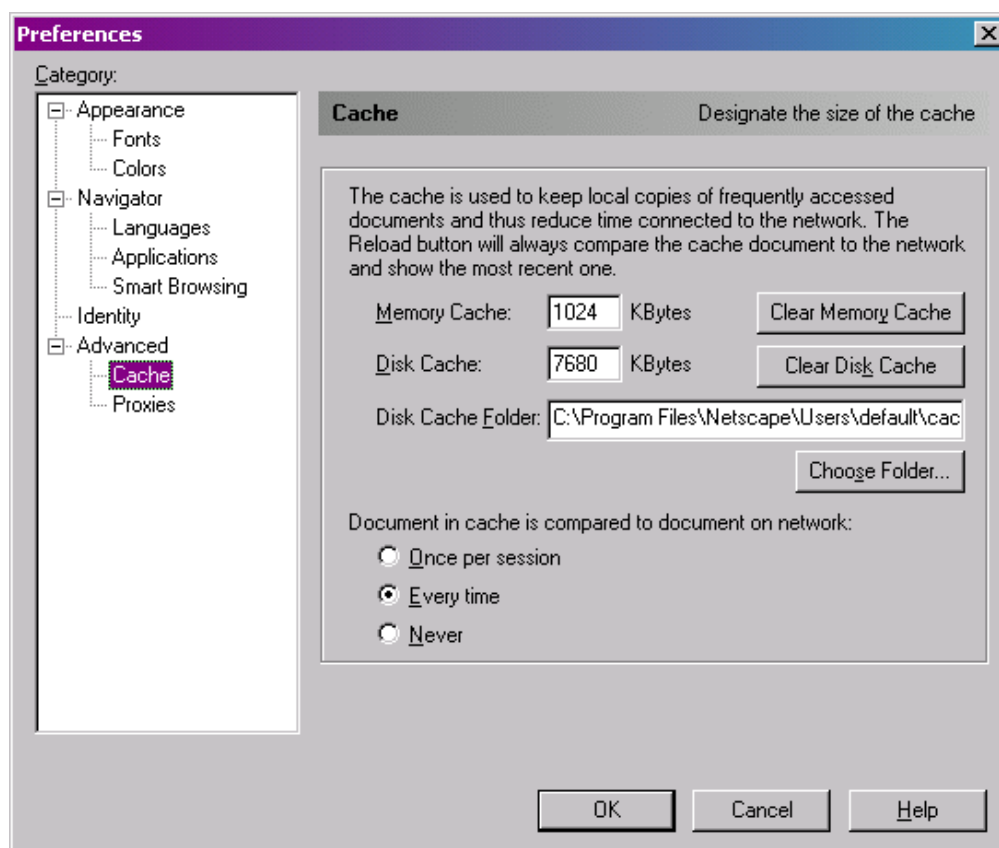
1. Open **Netscape Navigator** and once open select the **Edit** command from the top of the screen, then select **Preferences** from the drop down menu.



2. The Preferences dialogue box will appear. Highlight **Advanced** in the left hand column to display the advanced settings. Ensure that the box is ticked next to **Enable Java** and **Enable JavaScript**.

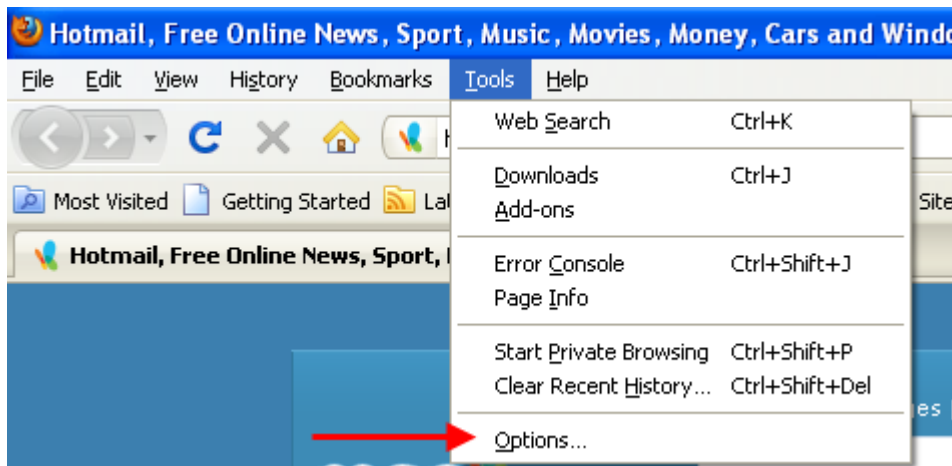


- Now double click on **Advanced** in the left hand column to open the sub menus. From the sub menus highlight **Cache** to display the cache settings on the right. Ensure that the radio button is selected next to the **Every time** setting for “**Document in Cache is compared to document on network:**”. This will ensure that the connection settings for Netscape are always looking for updated information, not that retrieved from the PC's own memory.

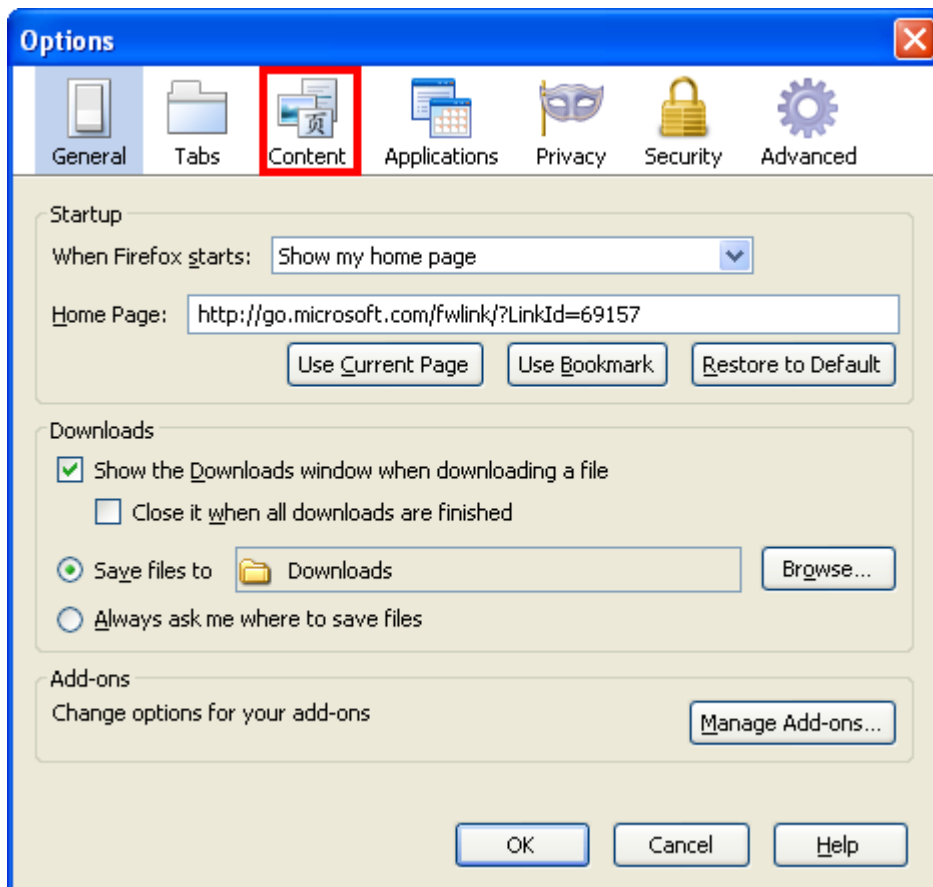


Firefox

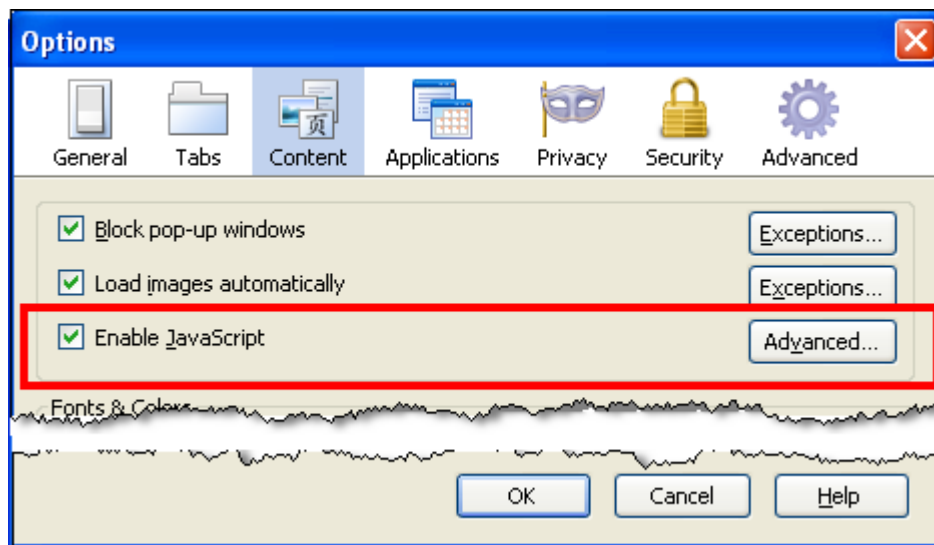
1. Open Mozilla Firefox and once open select the **Tools** menu from the top of the screen, then select **Options** from the drop down menu.



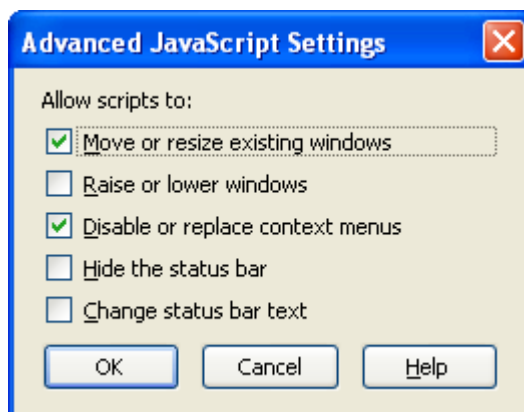
2. The Options dialogue box will appear. Click Content in the top menu bar to display the Content settings.



3. Ensure that the box has been ticked next to Enable Java to Enable JavaScript. Click on the Advanced to display the advanced settings.



4. From the sub menu highlight Disable or Replace context menus to ensure that the connection settings for Firefox are always looking for updated information, not that retrieved from the PC's own memory.

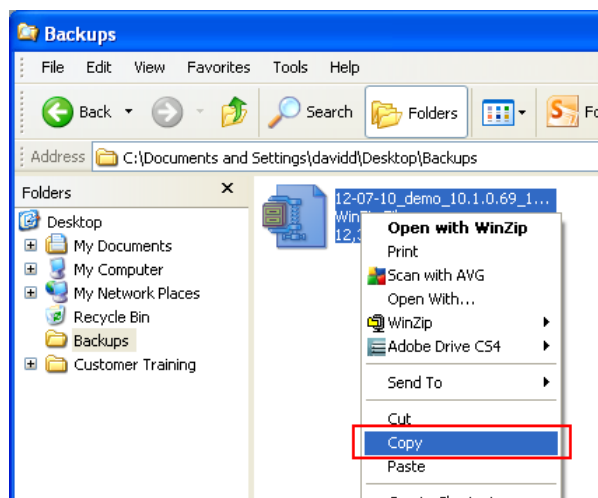


Copy and Paste

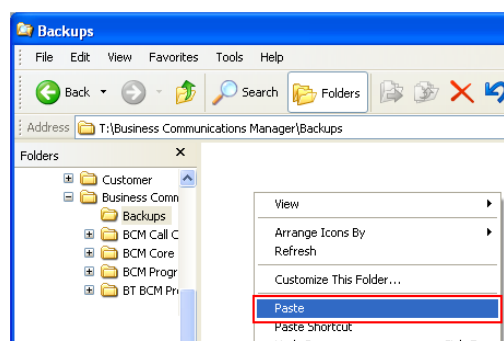
It may be necessary to copy documents or files and paste them into another location. The procedure for this is quite straight forward although there are other ways than the one described. When moving a file, you delete it from its original location. When you copy a file, you duplicate it in another location.

Windows XP

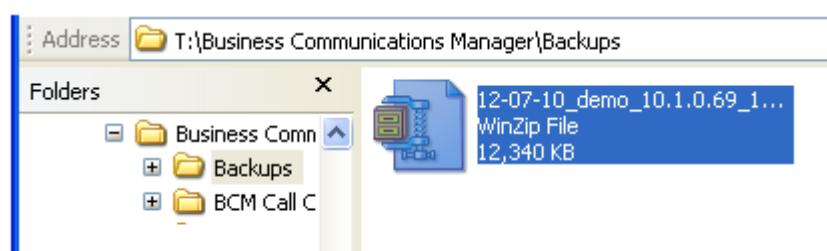
1. Open My Computer/ My Documents or the location you wish to copy the file from and select the file or folder that you wish to copy. Highlight the file and right click. From the menu select **Copy**.



2. Now open the destination folder. Again right click within the folder, and from the menu select **Paste**.

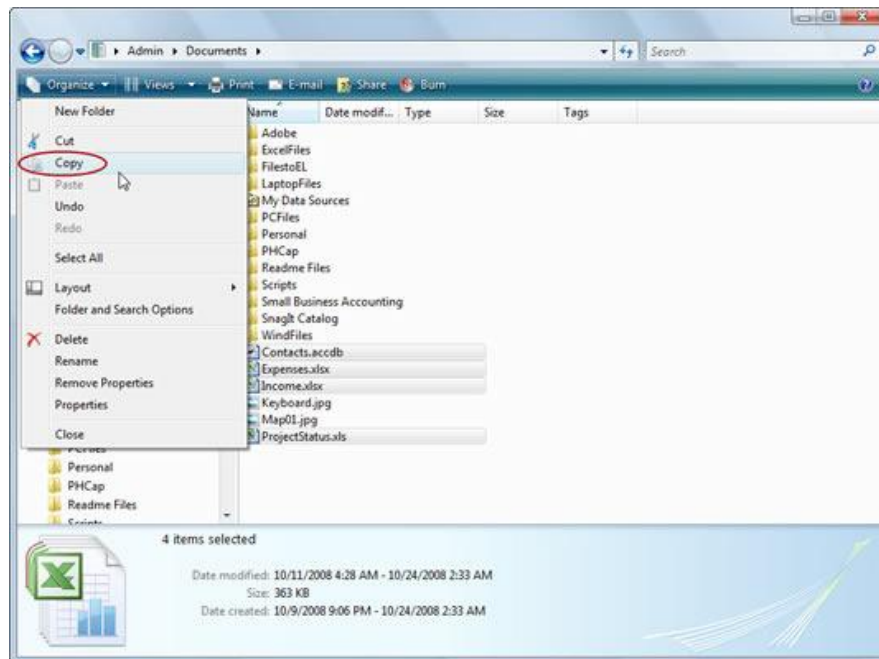


3. The copied document will now be seen within the folder window.

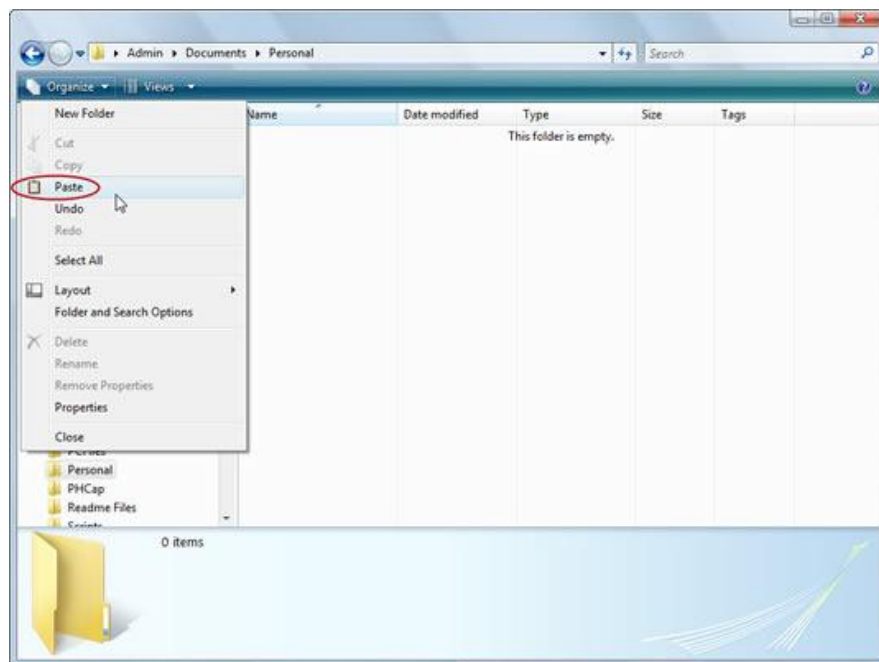


Windows Vista & 7

1. Open the location you wish to copy the file from and select the file(s) or folder(s) that you wish to copy. Click and Highlight the file (Using the mouse and Ctrl key it is possible to select multiple files) and right click. From the on screen menu select **Copy**.



2. Now open the destination location and again right click within this location, and from the screen menu select **Paste**.



3. The copied document(s) would then be seen within the new folder window.

Firewall Settings

It could be necessary to change the firewall settings or add additional ports to the firewall exceptions screen to allow communication between the BCM and an application installed on a customer's PC. Within the various operating systems the procedure is quite straight forward. Although this is normally the responsibility of the **Network Administrator** to ensure that these ports are not blocked by any firewall. E.g. RCC installation

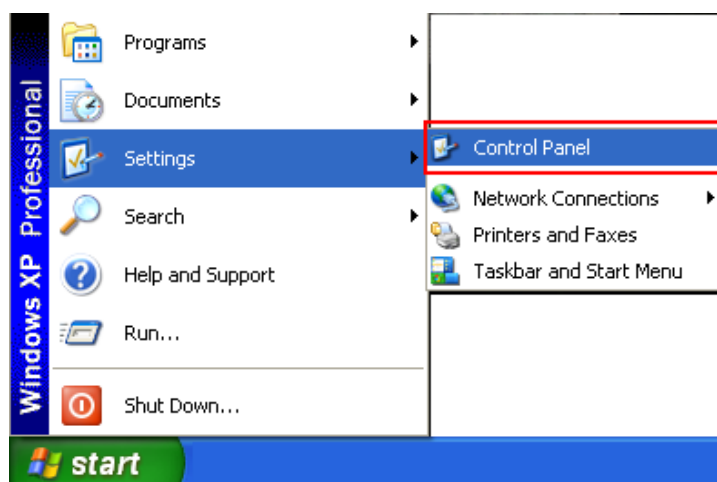
Installation Overview

- **Firewall Considerations** - There are a number of ports that are required for RCC to function correctly:
 - Port 80 – standard port used by the RCC Web Host PC for IIS
 - Port 8088 – used for the Reporting Server in the BCM
 - Port 6010 – used by the RCC Real Time Server
 - Port 6011 – used by the RCC Reporting Server
 - Port 3500 – used for wallboard traffic
 - SoftBoards have configurable ports, e.g. 3500 – 3512, so ensure these ports are open as well
 - Also, ensure that the following files are not being blocked by personal firewalls:
 - inetinfo.exe java.exe mysqld-nt.exe printCaller.exe,
 - rcclauncher.exe wallboarddriver.exe
 - **Note:** It is the responsibility of the **Network Administrator** to ensure that these ports are not blocked in any firewall between the BCM and RCC Web Host PC

Windows XP

To be able to view or make the changes detailed below, you must log-on to the PC with Administrative rights. If unsure, confirm with the site network administrator that access to firewall settings is available through the logon credentials.

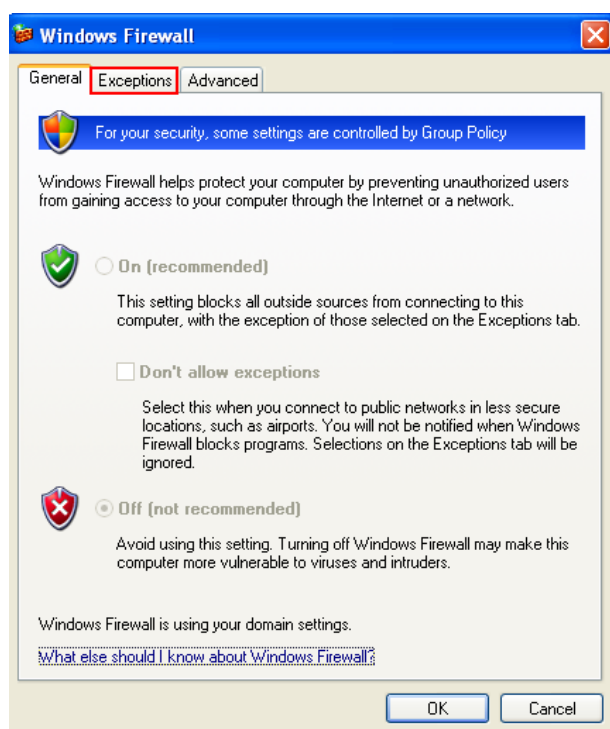
1. Start by gaining access to the firewall screen on the required PC through the **Control Panel**.



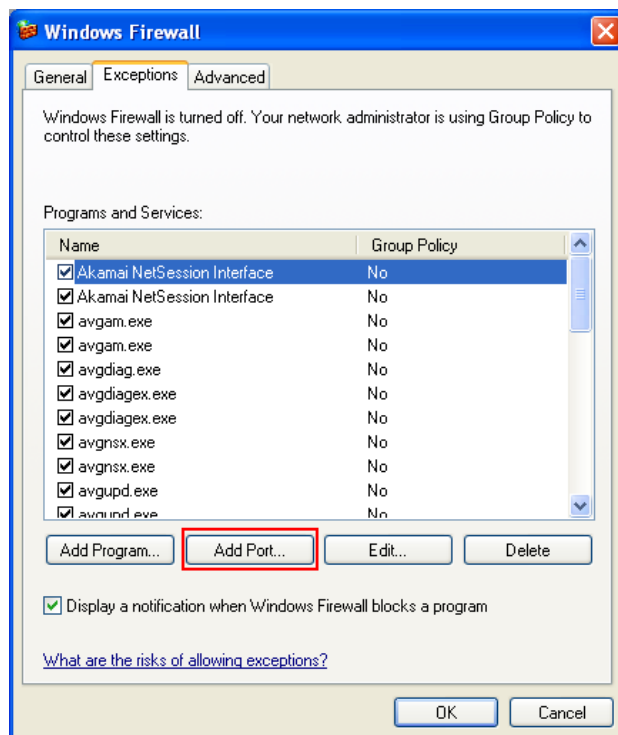
2. After the Control Panel opens, select the **Windows Firewall** icon.



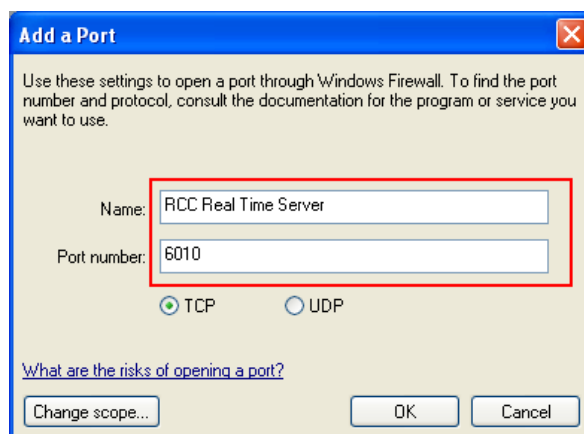
3. When the screen appears, click on **Exceptions**.



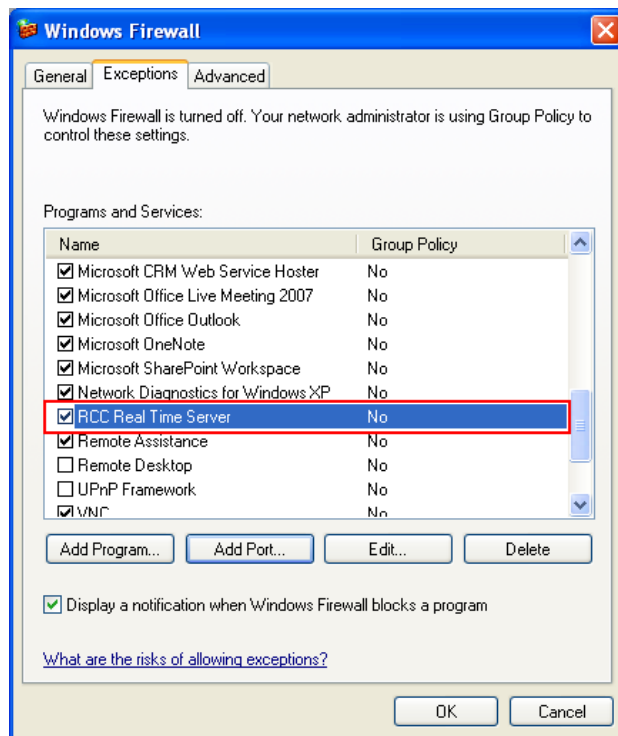
4. To add a port with the ability to bypass the current firewall settings, click on **Add Port**, to view current settings for a Port or Program, click to highlight and click on **Properties** and the **Add Port** screen will be displayed.



5. Enter the required Port details by giving it a suitable **Name** associated with the required **Port number**. Click **OK** to confirm the port details to be added.



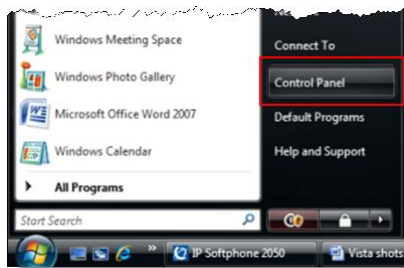
6. Check within the **Windows Firewall Settings** screen that the added port is visible. To confirm or change port settings, highlight the port name and click on **Edit**.



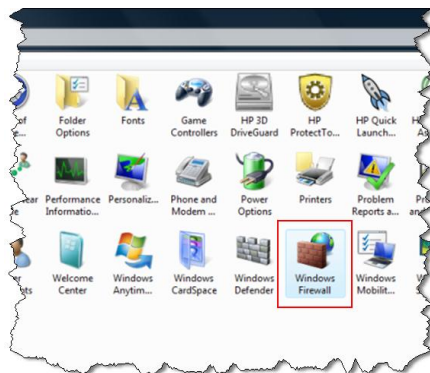
Windows Vista & 7

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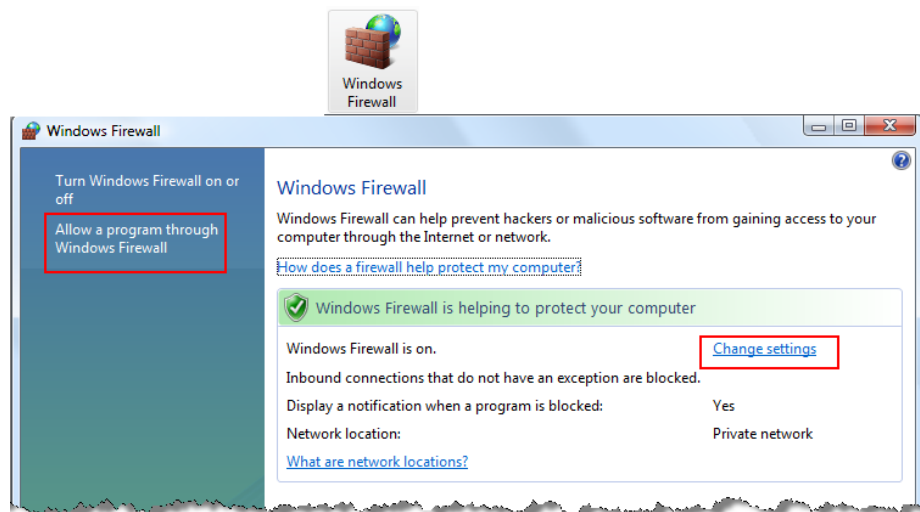
1. Start by gaining access to the firewall screen on the required PC through the **Control Panel**.



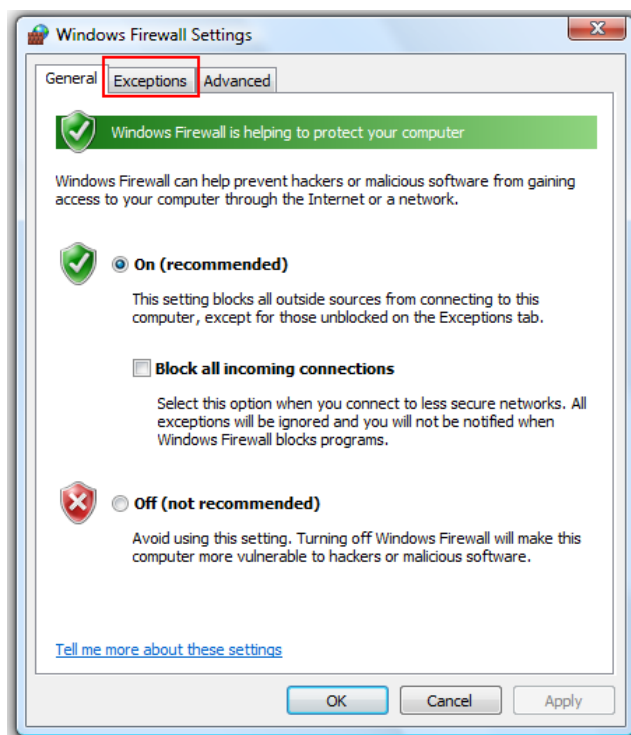
2. Once the Control Panel is open select the **Windows Firewall** icon.



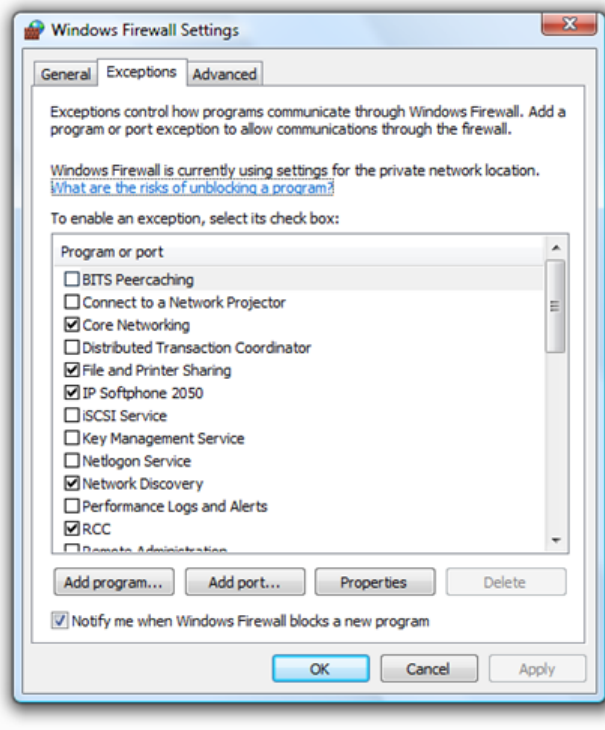
3. The Current Firewall status is displayed, selecting either **Allow a program through Windows Firewall** or **Change Settings** links to view the settings screen.



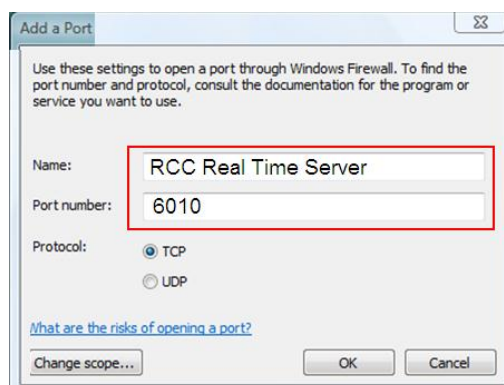
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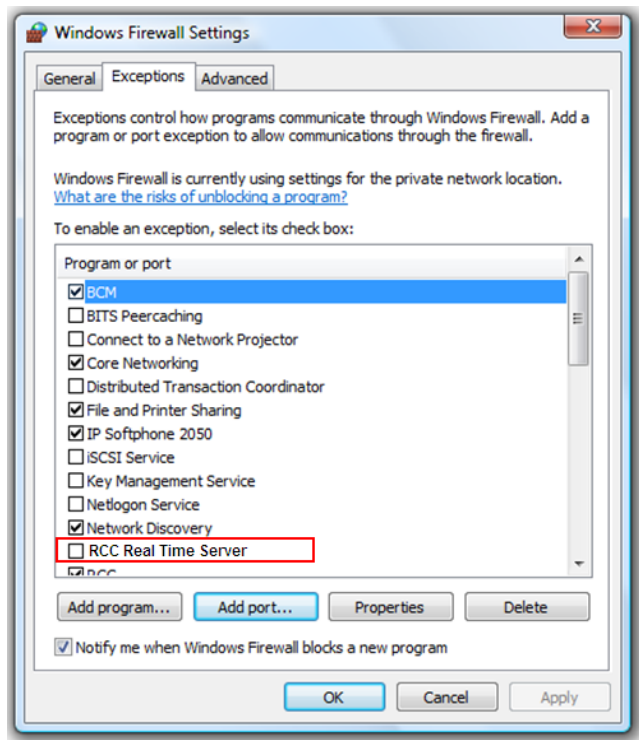
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6. Entering the required Port details, by giving it a suitable **Name** associated with the required **Port number**. Click **OK** to confirm the port details to be added.



7. Check within the **Windows Firewall Settings** screen that the added port is visible. To confirm or change port settings, highlight the port name and click on **Properties**.



8. Configure additional ports as required